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ELEMENTS OF PROCESS QUALITY WITHIN A PRESCHOOL'S LANGUAGE AND EARLY LITERACY ENVIRONMENT: THE INFLUENCE ON CHILDREN'S PRE-READING AND WRITING PERFORMANCE IN THE BEGINNING OF KINDERGARTEN

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Education

Cynthia Lynn Miller

Indiana University of Pennsylvania

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Title: Elements of Process Quality Within a Preschool's Language and Early Literacy Environment: The Influence on Children's Pre-Reading and Writing Performance in the Beginning of Kindergarten

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The purpose of this correlational study was to determine whether a relationship existed between the physical and social elements of process quality within a preschool's language and early literacy environment and children's pre-reading and writing performance in the beginning of kindergarten in a rural school district. The study examined school readiness, quality preschool experiences, and early literacy development with theoretical concepts by Vygotsky providing the foundation for children's development. Four Keystone STAR preschools and ninety-seven kindergarten children participated in the study. Preschool observation data were collected utilizing the *Early Childhood Environment Rating Scale – Revised Edition (ECERS-R)* (Harms, Clifford, & Cryer, 1998) and the *Early Language & Literacy Classroom Observation (ELLCO) Pre-K* (Smith, Brady, & Anastasopoulos, 2008). Assessment data pertaining to children's pre-reading and writing performance in the beginning of kindergarten were collected from the *Center for Improving the Readiness of Children for Learning and Education (CIRCLE)* (Landry, Assel, Williams, Zucker, Swank, & Gunnewig, 2014), *Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next* (Good, Kaminski, Cummings et al., 2011), *Concepts About Print* tasks, and District Writing Samples scored using the *Conventions of Writing Developmental Scale* (Feldgus & Cardonick, 1999).

Demographic data were also collected about kindergarten participants to provide background information used for statistical analyses. Qualitative data were collected in the form of preschool observation notes and information reported on a *Response Survey for Participating Preschools*. Preschool observation data from the *ECERS-R* and *ELLCO Pre-K* revealed strengths and weaknesses in rating scores for elements of process quality related to language and literacy. Results of data analyses showed a significant relationship between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *DIBELS Next*. Other factors that were found to have significant relationships included gender (female) with performance on the *CIRCLE* Rapid Letter Naming, gender (female) with performance on the *DIBELS Next*, and entry age to kindergarten with results from the *CIRCLE* PA Composite score. This study found the quality of preschool environments, among other factors, to contribute to children's early literacy development.

DEDICATION

This dissertation is dedicated to all the women and men in the world who love children, whether it be their own or those they care for at home or at work. It's our nature to always want what's best for kids. Knowing how children develop, it is our goal to be nurturing and understanding and to provide the highest quality experiences to foster their development. Spending five years to write this dissertation reminded me that no matter how much time goes by, what was important at the beginning remains equally important throughout the journey and continues into the future. My love for children remains forever!

ACKNOWLEDGMENTS

To my daughters, Jordan and Cera, for understanding and providing the time needed to finish what I started. I hope my accomplishment serves as a model for your future endeavors by demonstrating that hard work and perseverance pays off. Never give up!

To my Amazing Grace, Chris, for your love and support. Thank you for being there for me. To my father, Jim, for instilling in me the motivation to set goals and achieve them. You are a wonderful role model. To my mother Eleanor, step-mother Marilyn, and brother Jimmy for believing in me. Eric, I appreciate the elaborate refresher on statistics. To all my Morey family and friends, I am thankful for having you in my life.

To my Dissertation Committee past and present: Dr. Patricia Pinciotti, Dr. George R. Bieger, Dr. Susan Harlan, Dr. Margot Vagliardo, and Dr. Mary Anne Hannibal for your time and expertise that guided this dissertation process to a successful product. To share a love for children and the field of early childhood education with such sincere individuals is an honor. A special thank you to Dr. Patricia Pinciotti for your support and commitment in helping me reach the finish line. The amount of time we spent together was valuable. Happy Retirement!

To Cohort IV, for your enduring friendships, words of encouragement, and determination to follow my dreams. The bonds we've created will never be forgotten. Fix Bayonets - Doctorate or Bust!

TABLE OF CONTENTS

Chapter Page

Chapter Page

Chapter Page

Chapter Page

LIST OF TABLES

Table Page

LIST OF FIGURES

CHAPTER 1

INTRODUCTION TO THE STUDY

Each year schools enroll a new cohort of kindergarten children. However, children entering kindergarten do not begin at exactly the same age (Anderson-Levitt, 2005). Even though children may be entering kindergarten at the age of five, there can be a ten to twelve month difference between the youngest and oldest kindergartners amounting to 20% of their entire lifespan (Bryant, Clifford, & Peisner, 1991; Crosser, 1991). Variations in age also bring differences in children's readiness skills acquired across cognitive, social, and emotional dimensions of children's development (Carlton & Winsler, 1999; National Association for the Education of Young Children [NAEYC], 2001). Young children are continuously developing cognitive, social, and emotional skills, all of which contribute to their overall readiness for kindergarten (Copple, 1997).

A child's development is rapid, uneven, episodic, and highly influenced by their early learning environment (Pandian & Zahabi, 2011). While children's foundation for learning begins in the home, preschools play a vital role in extending children's readiness skills. Knowing that disparities exist in children's home environments, preschools seek to provide consistent, rich opportunities to advance children's development across various domains.

To understand children's development across various domains, Pennsylvania has established the Learning Standards for Early Childhood (https://www.pakeys.org/pages/get.aspx?page=career_standards). Originally constructed by the Departments of Education and Public Welfare and later revised by the Office of Child Development and Early Learning, the Pennsylvania (PA) Learning Standards define a standard set of skills that children should know and/or do at particular age levels.

With the state's increased focus on Learning Standards, preschools are being held accountable more than ever for the progress of children's development and growth.

Readiness for kindergarten is complex in terms of which skills are most important and contribute to a smooth transition. Quality preschool experiences build children's readiness skills by providing rich experiences that develop and enhance early literacy. Literacy is evident in virtually all aspects of daily living making reading and writing valuable tools for children to acquire (International Reading Association [IRA], 1998). Having preschools that emphasize the ability to communicate, use language, and understand pre-reading and writing skills prior to formal school helps strengthen the transition to kindergarten which in turn influences later literacy achievement (National Institute of Literacy [NIL], 2008).

In an effort to provide quality preschool experiences that improve outcomes for children, Keystone STARS was created (Pennsylvania Office of Child Development and Early Learning [PA OCDEL], 2010). Keystone STARS is a quality rating system established in 2002 by Pennsylvania's Office of Child Development and Early Learning (OCDEL). Preschools can choose to participate in Keystone STARS to improve the quality of experiences for children. Keystone STARS are defined by levels with STAR 4 being the highest quality. STARS quality is defined for each level based on Performance Standards in the areas of Learning Program, Partnerships with Family and Community, Staff Qualifications and Professional Development, and Leadership and Management. In June 2013, there were 3,905 child care providers in Pennsylvania participating in Keystone STARS, providing quality early learning experiences to an estimated 101,753 children under age five and 62,919 school-age children (PA OCDEL, 2014).

Quality preschools recognize and value the importance of providing quality early learning experiences that develop children's readiness skills. With quality preschools like those in Keystone STARS, children are provided purposely selected materials and an abundance of opportunities to enhance their learning. Children also experience daily social interactions and developmentally appropriate activities, such as sociodramatic play, to explore and engage with others. All of these elements contribute to the process quality within a preschool environment to provide the best early learning experiences for children.

Statement of the Problem

Parents and kindergarten teachers have their own beliefs and expectations about specific readiness skills that children should attain during their early learning experiences. With strong parent beliefs about the need for academic skill development prior to kindergarten entry, preschool practices may reflect more of what parents want rather than what children developmentally need. The possibility exists that as preschools seek to build children's readiness skills, some may lose focus of developmentally appropriate practices in lieu of more academically focused activities. As a result, preschool children may not only enter kindergarten with an achievement gap, but more importantly an "experience gap." Using the Learning Standards as a framework for child development and learning, along with knowledge about each child as an individual, teachers should be making developmentally appropriate decisions to promote student growth (Bredekamp & Copple, 2009). The PA Learning Standards provide the big picture. Preschools should promote flexible teaching to make learning fun for children. Developmentally appropriate early childhood practices, such as learning through

sociodramatic play, need to be kept in the forefront of children's education. Each preschool's approach to developing children's readiness skills, specifically early literacy, can vary with its components and aspects of classroom experiences which affects later literacy achievement. Therefore, an ongoing need exists to maintain or improve the quality of children's preschool experiences by examining elements of process quality as it relates to preschools' approach to developing children's early literacy and the influence it has on children's pre-reading and writing performance in the beginning of kindergarten.

Purpose of the Study

Researchers have identified many variables that can have an effect on early learning and achievement: Preschool experience (Entwisle, 1995), kindergarten readiness skills (Stipek, 2003), entry age to kindergarten (National Institute of Child Health and Human Development [NICHD] Early Child Care Research Network, 2007), gender (Oshima & Domaleski, 2006), race (Mashburn, 2008), socioeconomic status (Cunningham, 2010), language differences (Maxwell & Clifford, 2004), single-parent households (Maxwell & Clifford, 2004), and a mother's level of education (Education Commission of the States [ECS], 2008). In the home, children encounter many different resources, types, and degrees of support for learning (IRA, 1998). While home variables are predetermined and cannot be altered, a preschool environment has greater potential for consistent quality opportunities that can affect children's cognitive learning.

This correlational study focused on the development of children's readiness skills for kindergarten through the examination of quality preschools participating in Keystone STARS. The purpose was to identify the process quality factors within a preschool's language and early literacy environment and the influence these factors had on children's

pre-reading and writing performance in the beginning of kindergarten. A quality preschool environment is described as one that provides appropriate support for a child's development and learning. Preschools rated high in quality by Keystone STARS pay specific attention to what is offered to children in terms of elements of process quality. Knowledge was gained about the experiences provided in quality preschool environments after examining specific physical and social elements of process quality related to early literacy, as measured by multiple observation tools. While the focus on early literacy is just one aspect of developing school readiness, it is the most important as it relates to preparing children to be successful readers and writers. School success depends largely upon one's ability to read and write. Having knowledge about quality preschool experiences provides teachers with feedback on what works for promoting continuous quality improvement in preschools' language and early literacy environments.

The researcher examined the relationship between elements of process quality within preschools' language and early literacy environments and children's pre-reading and writing performance in the beginning of kindergarten in a rural school district in northeast Pennsylvania. Examining children's early literacy performance in the beginning of kindergarten provided information about the influences quality preschool experiences had on the transition to school and potential later literacy achievement. Additional variables of entry age to kindergarten, gender, race, and socioeconomic status (based on eligibility for the federal free or reduced lunch program) were included to provide further information about a child's background and the influence of each of the variables.

Research Questions/Hypotheses

The research questions answered with the results of the study included:

1. What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on measures of children's pre-reading performance in the beginning of kindergarten?
2. What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on the measure of children's writing performance in the beginning of kindergarten?
3. What other factors influence children's pre-reading and writing performance in the beginning of kindergarten, i.e., entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff?

The research hypotheses for the study were as follows:

1. A relationship exists between the physical and social elements of process quality in a preschool's language and early literacy environment on measures of children's pre-reading performance in the beginning of kindergarten.
2. A relationship exists between the physical and social elements of process quality in a preschool's language and early literacy environment on the measure of children's writing performance in the beginning of kindergarten.

Theoretical Context

The theoretical context chosen for this study was based on the constructivist belief of Lev Vygotsky. Vygotsky attributed the root of an individual's development to society and culture (Vygotsky, 1978). Vygotsky's theory of how children learn is based on the constructivist concept of mediation, unlike other theorists who believed children's

development was the maturation of pre-existing ideas. Mediation is the process of interaction found in both the physical and social elements of a learning environment. Interacting with materials and individuals often occurs during play, in particular sociodramatic play. Play promotes interactions that not only impact the development of language, but allow children to explore pre-reading and writing skills through meaningful contexts. Play activates a Zone of Proximal Development (ZPD). In a ZPD, adults or more capable peers facilitate the process of constructing children's school readiness skills, whether through physical materials and tools or through social interactions. When mediation is evident, higher mental processes are involved and advanced. Children who develop higher mental processes demonstrate imagination, abstract thinking, self-regulation, and representation in multiple ways. Vygotsky's theoretical concepts of mediation and higher mental processes contribute to children's cognitive development and provide a framework for what is necessary in a quality preschool environment.

Significance of the Study

Studies have been conducted on the academic and behavior effect a quality preschool experience had on children's future achievement (Dickinson & Tabors, 2002; NICHD Early Child Care Research Network, 2005; Peisner-Feinber et al., 2001). Both *structural quality*, such as class size, teacher-child ratios, and the educational attainment of staff, and *process quality* can contribute to children's successful preschool experiences. Process quality refers to the *physical* and *social elements* that provide children with materials, opportunities, interactions, and activities that develop school readiness. While both structural and process quality of preschool programs can be examined to determine strengths and needs for improvement, this study reported on the

input of specific elements of process quality within a preschool's language and early literacy environment and how they related to the output measured with children's pre-reading and writing performance in the beginning of kindergarten.

While other studies have related children's social, emotional, and cognitive skills to later academic achievement, this study placed a strong emphasis on language and early literacy. The attainment of language and early literacy is a developmental progression that extends through the preschool years as necessary communication skills to be successful in school. There are no other studies that have reported on the use of the Pre-K version of the *Early Language and Literacy Classroom Observation (ELLCO)* to describe what occurs in preschools' language and early literacy environments. Results from this study were obtained from preschools participating in Keystone STARS in a rural area of northeast Pennsylvania. No known studies have been conducted with Keystone STARS preschools other than what the Pennsylvania Office of Child Development and Early Learning has reported (PA OCDEL, 2010). Findings from this study expanded the literature on quality preschool learning experiences focusing on developmentally appropriate language and early literacy practices. Suggestions for improving the quality of preschool environments with a focus on language and early literacy have many benefits that may help close the readiness gap and ease the transition to formal schooling.

The information gained from this study will benefit parents of young children, preschools, and elementary schools, specifically kindergarten teachers. Both parents and teachers want to see preschool children have a solid foundation of readiness skills to make a smooth transition to kindergarten and subsequently become successful readers

and writers. Joint conversations can focus on parent and teacher views of readiness and how to best support children's development. Expanded communication efforts can occur among teachers and with parents to share specific elements of process quality that children experience within quality preschool environments. Understanding elements of process quality and how it affects children's development can potentially eliminate gaps in children's learning experiences which become evident once children enter kindergarten.

Information obtained from this study may help to modify preschools' instructional strategies focusing on language and early literacy and developmentally appropriate approaches to learning that will maximize a range of children's developmental skills. Preschools can also use the information to guide staff development for early childhood educators and inform other early learning programs about best practices that result in positive outcomes for children. Knowing what constitutes quality preschool experiences and how it influences children's later academic achievement is important information that validates preschools' efforts.

Kindergarten teachers can also benefit from knowing the process quality factors of preschools' language and early literacy environments as they seek to build partnerships with preschools in bridging the transition to formal schooling. Preschool teachers and kindergarten teachers can work towards a shared vision of important readiness skills children need to increase the likelihood of their success in school. Knowing children's acquired early literacy skills can assist teachers with selecting appropriate kindergarten entry assessments that will accurately capture children's prior knowledge. Kindergarten

teachers are then able to design developmentally appropriate strategies and activities to differentiate instruction specific to individual student needs.

Definition of Terms

For the purpose of this study, the following definitions were applied:

Developmentally Appropriate Practices - The delivery of intentional teaching practices based upon the child's background, interests, and needs to develop or enhance new skills (Bredekamp, 1997).

Early literacy – Developing language, pre-reading, and writing skills during a child's preschool years.

Environment – Includes the use of space, materials, and experiences to enhance children's development, daily schedule, and supervision provided (Harms & Clifford, 1980).

Literacy readiness – Having achieved developmental expectations in the area of early literacy as measured by kindergarten assessments pertaining to pre-reading and writing.

Preschool – Any group program in a center, school, or other facility that provides experiences for children ages three to five prior to kindergarten entry.

Process Quality – The means through which preschools transmit benefits directly to children including the physical and social elements, as measured by the *Early Childhood Environment Rating Scale - Revised (ECERS-R)* and/or *Early Language and Literacy Classroom Observation (ELLCO) Pre-K* (Mashburn, 2008).

Quality – Determined by the process and structural features that produce benefits for children's development (Espinosa, 2002).

School Readiness – Acquisition of developmentally appropriate cognitive, social, and emotional skills prior to entry to kindergarten.

Structural quality – Aspects of preschool programs that are typically targeted by financing or regulations through state licensing requirements (Espinosa, 2002; Mashburn, 2008).

Limitations

Limitations could affect the ability of the study's findings to be generalized to other people or situations. There were six limitations of this study:

1. Information from this study could only be generalized to school districts in a rural setting in Northeast Pennsylvania with similar populations, although the information could inform all early childhood literacy contexts.

2. Information was obtained regarding children in kindergarten during the 2014-2015 school year only. Each year a new cohort of children are enrolled in kindergarten. Every child is unique with their acquired literacy skills.

3. Only measures of achievement, not cognitive ability (aptitude), were available for analysis. Knowing one's level of intelligence could provide an explanation for differences in performance between students of varying ages (Crosser, 1991).

4. Assessment instruments gathered information about the knowledge children attained. The assessment data collected depicted a snapshot of academic achievement based on retrospective learning.

5. When obtaining information regarding children's preschool experiences, there were inequalities in the length of time spent in preschool. Although, a study conducted

by NICHD Early Child Care Research Network (2000a) found that the length of time spent in quality child care did not affect children's language and cognitive outcomes.

6. Other than socioeconomic status, factors relevant to the home environment were not measured. The focus of the study was on how opportunities and interactions provided in preschool learning environments could influence children's school readiness skills.

Chapter Summary

Continuous efforts are being made to improve the quality of experiences provided in preschool programs. Being able to link children's literacy readiness to their early learning experiences can help promote the successful development of young readers and writers (Cunningham, 2010). With current data from the 21st century, informed decisions could be made with regards to developmentally appropriate preschool practices that support academic success. An investment in early care and education of children is an investment in the future (PA OCDEL, 2010). The research problem, purpose, and questions/hypotheses were identified as a basis for this study. Reasons signifying the importance of this study were explained, including the benefits to those directly involved. Operational definitions were also given.

Organization of the Study

This dissertation is organized into five chapters with each chapter containing specific information describing the study. Chapter two discusses in detail Vygotsky's concepts of mediation and higher mental processes as the theoretical context for this study. Chapter two will also provide a thorough review of the literature pertaining to young children and school readiness, quality preschool experiences, and early literacy development. In chapter three, the research methodology will be defined, including

research design, selection of participants, description and utilization of observation and assessment tools, data collection procedures, and summaries of data collected. Chapter four provides the results of data analyses with the dependent and independent variables that were correlated for the purpose of answering three research questions. Contents of chapter five include a summary of the findings, implications of the findings, and recommendations for future research.

CHAPTER TWO

REVIEW OF THE LITERATURE

A review of the literature on school readiness, quality preschool experiences, and early literacy development explored preschool environments and the experiences provided to children in preparation for formal school. The development of children's early literacy skills is an important element of quality preschool experiences. With a strong early literacy foundation, children are more equipped to be successful readers and writers. Vygotsky's theoretical concepts provided a foundation for quality preschool experiences that promoted early literacy development and formed connections to child development, mediation, and higher mental processes throughout the studies.

The following relevant studies reported on the beliefs surrounding school readiness from the perspective of parents and teachers and readiness skills found to be important for transition to formal school. Research on preschool environments examined specific elements of process quality, and the effect a quality preschool had on children's skill development, including long-term effects. Additional research, specifically on how language and early literacy was promoted in quality preschool environments and how educators' knowledge affected the facilitation of language and early literacy development, were included. Various strategies and activities that promoted early literacy development were discussed, in addition to the effects early literacy development had on later literacy achievement.

Vygotsky's Theoretical Context

Lev Vygotsky (1896-1934) was a Russian psychologist and founder of a theory of cognitive development that has impacted research about how children learn for many decades. His theory of cognitive development, also referred to as Social Development

Theory, grounded learning in both social and cultural contexts. Vygotsky's theory was built on the premise that individual intellectual development cannot be understood without reference to social supports (Rogoff, 1990). Development is a shared process of learning with children taking an active role as participants in their own development by socially interacting with other people. Vygotsky's theory also found that culture is formed from the efforts of people working together. Collaboration enhances children's later independence.

To understand children's development of various skills, one must be familiar with Vygotsky's concepts of mediation and higher mental processes. Cognitive development occurs through mediation, which in turn guides the development of higher mental processes. Both mediation and higher mental processes support the ideas surrounding early literacy and how children are preparing for the transition to kindergarten. The skills children acquire during their early learning experiences contribute to their overall development into skilled participants in society.

Vygotsky's Concept of Mediation

Mediation is a key theoretical concept of Vygotsky's that is instrumental to children's development. Mediation can be described as the deliberate modification of an environment or the relationship between children and their environment for the purpose of obtaining an expected outcome (Vygotsky, 1962). Children have the potential to further develop when they become actively involved in their physical and cultural surroundings. By interacting with both the environment and those around them, development advances. Children and their learning environment are inseparable for understanding intellectual development (Rogoff, 1990).

In contrast to Piaget's belief, Vygotsky's theory emphasizes learning preceding development with instruction aimed at a child's emerging skills (Vygotsky, 1978). Adult interaction is essential in guiding children's development beyond their current knowledge and abilities. The relationship resembles an apprenticeship with adults as more skilled partners contributing to novice children's cognitive development (Rogoff, 1990). Cognitive development also involves social and emotional processes. Adults provide opportunities for new learning with frequent guidance and instruction as they interact with children in a Zone of Proximal Development (ZPD) (Vygotsky, 1962). The ZPD defines functions that have not yet matured. The ZPD targets regions of children's development in the process of maturation that are on the edge of emergence. Adults or more capable peers assist with making connections between what children already know and what they are in the process of learning (Vygotsky, 1978).

To provide early learners with opportunities to expand their learning and development, a quality preschool environment is necessary. A quality preschool environment has many physical elements, which are materials and opportunities that promote the development of cognitive, social, and emotional skills necessary for children beginning kindergarten. Teachers deliberately select materials, arrange, and structure children's participation in activities and interactions to build their repertoire of knowledge and experiences based on knowledge of children's interests and where they are developmentally. Therefore, a quality preschool environment provides appropriate expectations for children's development by providing each child with the right mix of challenge, support, sensitivity, and stimulation.

Building children's language, pre-reading, and writing skills are essential in a quality preschool environment. Literacy involves primary modes of communication (speaking, reading, and writing) and is required for success throughout childhood into adulthood. Preschool environments rich in early literacy include numerous interest centers equipped with developmentally appropriate materials that provide a variety of mediated learning experiences. Mediated learning experiences refer to the connections children have with objects and adults and/or peers that advance learning. Examples of purposefully selected tools that can guide children's emerging understanding of early literacy skills include children's literature, labeled items, songs, and nursery rhymes. Providing books and exposing children to environmental print will not only provide access to quality materials but promotes social interactions among children and adults.

Mediated learning experiences are instrumental in building relationships with others. A prime opportunity for children to build relationships and engage in social interactions is during sociodramatic play and literacy activities. Vygotsky (1978) identified play as the leading source of a child's development during the preschool years. Adults interact with children during play if early literacy development is expected to occur. Social guidance aids children in learning to communicate (Rogoff, 1990). Communication is a shared process with adults being a source of knowledge to build speech from children's comments. Adults facilitate children's play by engaging in cognitively challenging conversations with a wide vocabulary that stimulates reasoning and promotes children's use of new words (Howes, 2003). Adults engage in frequent interactive book reading where they model challenging language, expression, and fluency. Adults mediate children's language development by asking complex questions

and fostering further discussions, while inspiring children's critical thinking and problem solving (Gentry, 2010). Children's receptive and expressive language is developed as a result of interactions with peers during play. During sociodramatic play, children's spoken language can lead to written language. Play enables children to make meaning of words through exposure to literacy.

Mediation occurs with the use of quality materials and positive interactions with others making higher mental processes possible. If mediation occurs outside the ZPD, the result is ineffective development. Adults acting within the ZPD provide children with an optimal learning space for growth and can motivate children toward a goal. For this reason, adults need to be cognizant of children's strengths and weaknesses and understand that each child is unique with the timing of their development. Each opportunity and activity children experience within a quality preschool environment helps move their development forward.

Vygotsky's Concept of Higher Mental Processes

In addition to mediation, higher mental processes are also vital to children's development. Higher mental processes are a function of mediated activity whether through materials and opportunities or interactions with others (Kozulin, 1990). Children use higher mental processes to expand their social, emotional, and cognitive skills to an advanced understanding of the world around them. Children work in advance of themselves, which is significant of Vygotsky's belief that learning leads development. Vygotsky referred to the following as higher mental processes: imagination, abstract thinking, self-regulation, and the ability to represent information in multiple ways (Kozulin, 1990). Each higher mental process interacts with one another and is integral to

literacy development. Children make connections to why literacy is important and explore ways to apply their knowledge. As children develop higher mental processes, they are better equipped for a smooth transition to formal schooling.

Imagination is an important higher mental process for developing children's cognition. Children use their imagination as they communicate verbally or through written expression. Imagination flourishes and continues to develop through socially meaningful activities (Kozulin, 1990). Participating in sociodramatic play is an example of a socially meaningful activity. Sociodramatic play allows children to imitate, interact, and learn from others by taking the perspectives of others. To imitate, children take risks by stepping away from what they already know to try something new (Vygotsky, 1962). During sociodramatic play, children use their imagination to role play and create social situations. Characters and settings are established with purposeful props that foster language development and problem solving skills (Vygotsky, 1978). Imagination stimulates the creative flow of ideas that contributes to children's cognitive, social, and emotional development.

Abstract thinking is another important higher mental process for developing children's cognition. Children use their imagination and intellectual creativity to manipulate and explore with objects, which enables them to see the immediate function of those objects. Children then apply their imagination to the abstract potential of objects. Many props used during sociodramatic play can represent real-world items, such as a block representing a telephone or a stick representing a horse. Abstract thinking is situational and applies to real settings, whereas imagination is social and limited by one's experiences in the world. Adults act as mediators during children's play experiences by

guiding individual inquiry and communicating with children to help make connections between words and objects used during play. New vocabulary is developed as it relates to children's interest with toys and other materials. Once children develop the ability to represent through play, they are able to apply these abilities to develop early literacy skills.

In addition to imagination and abstract thinking, self-regulation is an important higher mental process that occurs through imaginative play. Self-regulation is a demonstrated behavior that shows children are aware of and understand their actions (Vygotsky, 1962). Children with developed self-regulation are able to respond appropriately to their environment (Florez, 2011). Children use their cognition and thinking to problem solve with others and negotiate meaning in various situations. The ability to self-regulate enables one to listen to stories, follow directions issued by others, make good decisions, share, and participate in games that require a higher level of engagement (Bodrova, 2008). As children develop self-regulation, they are gaining more self-control over their actions and are less driven by the need for instant gratification (Kozulin, 1990). Regulating one's thoughts, emotions, and behaviors is critical for success in school (Florez, 2011).

The ability to represent information in multiple ways is another higher mental process. Having the ability to represent information in multiple ways builds children's repertoire of skills, beginning with language and communication leading to other early literacy skills. Choice is important when representing in multiple ways. Representation in multiple ways is evident through graphic, written, verbal, or gestural expressions exhibited by children (Vygotsky, 1978). Children enhance their ability to communicate

through multiple literacies as meaning and experiences are attached to images. A child's drawing or painting is a graphic example of an idea, thought, or feeling. Children's graphic representations can become connected to speech and writing with the formation of letters then words. Learning to communicate requires a stimulating environment that provides developmentally appropriate mediated opportunities and activities in a wide variety of expressive forms. These essential elements of process quality are needed to influence children's development, particularly children's written, graphic, and verbal expression. Exercising the ability to represent in multiple ways depicts a child's attainment of an important higher mental process (Vygotsky, 1978).

Vygotsky's concepts of mediation and higher mental processes are intertwined and should be evident within quality preschool environments. Quality preschool environments provide authentic learning experiences that provide children with choices to engage in purposeful and meaningful use of multiple languages and early literacy. Each opportunity and activity promotes the development of children's cognition and social and emotional readiness for school. Using the knowledge of Vygotsky's theoretical concepts to support children's development is instrumental in providing children with a strong foundation to be successful in school.

School Readiness

Readiness, also referred to as school readiness or kindergarten readiness, is a comprehensive process that continues to be in the forefront of educational interest. Readiness first gained national prominence in 1990 with the adoption of the National Education Goals under the direction of President Clinton. Goal 1 stated that by the year 2000, all children in America would start school ready to learn (Copple, 1997). With a

national focus on children's readiness skills came the focus on children's early learning experiences and what they need to make a smooth transition and be successful in school. Readiness based on Vygotsky's constructivist perspective promotes development through opportunities to interact with others in stimulating environments (Marshall, 2003). The readiness skills that children develop during their early learning experiences are important as they lay the foundation for future learning (NAEYC, 1995). Without an environment where social construction of knowledge and higher mental processes occurs, children are more likely to have difficulties upon entry to school and thereafter (Ionescu & Benga, 2007). The research on school readiness focused primarily on (a) beliefs of parents and/or teachers, (b) children's demonstrated school readiness skills, and (c) parental supports important for transitioning to formal school and promoting student success.

Beliefs Surrounding School Readiness

Readiness is a multi-faceted concept. Therefore, it is important to acknowledge the values, beliefs, and expectations of everyone involved in the process. Theorists have taken different perspectives on what they feel constitutes readiness. Vygotsky's perspective on school readiness is based on a sociocultural theory. A sociocultural theory of development encourages dialogic interactions, support, and use of diverse learning activities. Children actively participate in the construction of knowledge situated in specific cultural contexts (Eun, 2010). Children's first learning experiences occur within their home environments. Within home environments, parents are critical components of children's acquisition of school readiness skills. The beliefs parents hold about the readiness skills their children need prior to school entry will have a direct effect on their

child-rearing practices within the home environment (Ionescu & Benga, 2007). Elementary teachers have their own beliefs about what is most beneficial for children to be successful in a kindergarten classroom. Knowing both parents' and teachers' beliefs about school readiness will aid communication and build partnerships in supporting children as they transition from preschool-age to formal schooling**.** The following studies examined parents' and teachers' beliefs about the importance of various school readiness skills and the expected behaviors children should demonstrate as they prepare to transition to kindergarten.

McAllister, Wilson, Green, and Baldwin (2005) conducted a study to examine parents' beliefs about school readiness. Participants included 150 families from Pittsburgh, Pennsylvania who participated in the national evaluation of Early Head Start (EHS) from 1996-2001. Ninety-one percent of the participants reported low socioeconomic status, while 104 families identified themselves as African American. Interviews were conducted with parents during the spring and summer prior to their child's entry to kindergarten. Seven families participated in ethnographic case studies from the time their children were four years old until completion of kindergarten. A photo-voice method of data collection was used by seven families, which involved parents using cameras to capture children in home activities that conveyed parents' understandings of school readiness. Parents then participated in discussions about each school readiness activity. Additional information regarding parents' school readiness beliefs was obtained from discussions with parent leaders belonging to the EHS policy council. Results of the study stressed the importance of considering one's culture and environmental stressors, such as socioeconomic status, when looking to strengthen the

development of young children. Parents' school readiness beliefs focused primarily on children's social and emotional health in preparation for school entry. Parents felt it was important for their children to play with others as a way of developing empathy and cooperative relationships. The need for supportive adults to build caring relationships with their children to help cope with the challenge of transitioning to a school environment was expressed. McAllister et al. (2005) also found that parents expected their children to demonstrate basic academic and self-help skills, such as knowing color names, how to count and read, dress self, and load a backpack.

West, Germino Hausken, and Collins (1993) conducted a qualitative study for the U.S. Department of Education's National Center for Education Statistics (NCES) to gather information pertaining to both parents' and teachers' beliefs about important characteristics to a child's readiness for kindergarten. A random national sample was obtained including 8,441 parents of preschoolers, in addition to 1,416 kindergarten teachers from 843 schools. From January through April 1993, parents completed the National Household Education Survey (NHES), while kindergarten teachers completed the Fast Response Survey System (FRSS) Kindergarten Teacher Survey on Student Readiness. Seven questionnaire items related to school readiness were common to both surveys and clustered into two groups. Behavioral items included: (a) Communicates needs, wants, and thoughts verbally, (b) Takes turns and shares, (c) Is enthusiastic and curious in approaching new activities, and (d) Sits still and pays attention. School-related items included: (a) Able to use pencils and paint brushes, (b) Can count to 20 or more, and (c) Knows the letters of the alphabet. Results found similar beliefs of parents and teachers with children being able to communicate needs, wants, and thoughts verbally

(92% and 84%), in addition to being enthusiastic and curious in approaching new activities (84% and 76%). There was a large disparity of beliefs between parents and teachers about the importance of taking turns and sharing (92% and 56%) and sitting still and paying attention (80% and 42%). The largest gap between parent and teacher beliefs about skills needed for entry to kindergarten was evident with using pencils or paint brushes (65% and 21%), counting to 20 or more (59% and 7%), and knowing the letters of the alphabet (58% and 10%). Overall, West et al. (1993) found that parents rated both behavior and school-related items related to children's school readiness higher than teachers. Parents' beliefs were strongly influenced by their educational attainment. The percentage of parents with less than a high school education always rated the importance of school-related items higher than parents with a college degree. Parents with higher education levels believed it was the role of kindergarten teachers to accommodate individual differences by implementing developmentally appropriate practices in the classroom.

A recent study conducted by Xiangkui, Lei, and Xiaosong (2008) extended beliefs about school readiness skills to first and second grade school teachers. Expectations about students' abilities and potential should be consistent between kindergarten and elementary school teachers. Otherwise, instructional practices and assessments could have a detrimental effect on children. A total of 218 parents and 370 teachers were surveyed with a self-developed questionnaire consisting of 36 items in six dimensions of school readiness: (a) physical well-being and motor development, (b) social and emotional development, (c) approaches to learning, (d) family, (e) language use, and (f) cognition and general knowledge. Results of the survey were examined to compare

beliefs about school readiness among parents, kindergarten teachers, and elementary school teachers. Parents emphasized academic-oriented skills more than teachers; whereas, teachers rated manipulation skills and self-control as significant readiness factors. Parents also felt their children should demonstrate independence and have the ability to communicate/interact with teachers. Both parents and kindergarten teachers found parent-child relations and frustration tolerance to be important. The concern of elementary teachers focused on compliance with teacher authority, parents' education background, moral awareness, and the ability to express. Xiangkui et al.'s (2008) study revealed a trend of parents and kindergarten teachers emphasizing children's interests with what is taught. Focusing on children's interests is a developmentally appropriate approach to learning that may have positive results as compared to developing skills that are not within children's reach, even with adequate adult support.

Research on the beliefs of parents and teachers found a mix of social, emotional, and cognitive skills important for transition to formal school. Throughout the studies, parents expressed a need for their children to develop a strong foundation of basic academic skills. Although a strong foundation of basic academic skills was believed to be important, less educated parents felt schools had the responsibility to prepare children with the necessary academic readiness skills to succeed. Parents' educational attainment was found to be a factor that influenced their readiness beliefs. Teachers' beliefs have changed over time with the latest importance of children being able to demonstrate self-regulation with an appropriate attention span (West et al., 1993; Xiangkui et al., 2008). Having the ability to self-regulate one's behavior is an example of a higher mental process supported by Vygotsky's theory. Demonstrating appropriate behaviors

contributes to one's willingness and ability to learn new skills. Parents also believed children's social and emotional skills should be strengthened to be ready for school. Play was mentioned as a way of developing children's readiness skills across various domains. During play, adults can model and teach children skills that will benefit their involvement in a kindergarten classroom. Having a shared understanding of what parents and teachers believe to be important school readiness skills and examples of what it looks like and how to promote children's development will affect the actions taken by parents and teachers to prepare children for the transition to formal school.

Readiness Skills Important for Transition to Formal School

Studies have been conducted examining parents' and teachers' beliefs about various school readiness skills. Results found that developing children's academic, social, and emotional skills are important for school readiness. Having knowledge of parents' and teachers' beliefs provided background when examining what actually occurs during the early childhood years to prepare children for school. Vygotsky understood teaching and learning to be a process, not a product. Rather than waiting for development to happen, adults are expected to foster children's learning to advance development so new knowledge can be generated. With appropriate support from adults, Vygotsky believed children have infinite potential to learn almost anything (Eun, 2010). The following studies identified key readiness skills that children were found to have demonstrated prior to formal school, as well as supports provided by parents that eased the transition and promoted student success.

Ladd, Herald, and Kochel (2006) conducted a study to determine aspects of children's social development prior to school that may help them adapt successfully to

the social entry tasks of kindergarten. Social school entry tasks included: (a) levels of social initiative with peers and teachers, (b) participation in classroom social learning activities, (c) exhibiting pro-social behaviors during interactions and activities, and (d) forming relationships with classmates and teachers. A total of 410 children in 31 kindergarten classrooms were observed during the first 10 weeks of school. The average time spent in solitary activities averaged 54.30% while the average time spent in asocial behaviors was 13.80%. Children spent 25.50% of the time demonstrating pro-social behaviors (social conversations, cooperative play, and friendly touch) as compared to 1% of antisocial behaviors (aggression, object possessiveness, and arguing). When observing peer group relations, 13.3% children were rejected, 15.20% were popular, and 57.50% acquired average status among their classmates. The percentage of children who made new friends before the 14th week of school was 51.60%, with only 13.80% maintaining their friendships from fall to spring of kindergarten. Teacher-child relationships were categorized as having closeness (degree of warmth and open communication), conflict, or dependency. An average of 31.10% children developed a close relationship with their teacher. Results of the various social school entry tasks demonstrated how behavioral styles and social skills developed in preschool can influence early school adjustment. Both peer and teacher-child relationships were found to be positively associated with children's attitudes towards classmates, school tasks, and the larger school environment. Children were more likely to participate in class activities, which in turn affected subsequent achievement.

The NICHD Early Child Care Research Network (2008) conducted research to determine whether parents' interactions with their children that supported the

development of autonomy and self-reliance predicted children's reading and math achievement at grade three. Self-reliance was defined as including personal initiative, behavioral self-regulation, autonomy, persistence, and engagement. A sample size of 641 children and their families was obtained from the 1991 National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD). Of the sample, 49% were female and 95% were white. Participating families had to have both fathers and mothers residing in the home from the time the child was 4 ½ years through grade three. Data were collected via observations, parent questionnaire, and achievement tests. Observations of parents' interactions that supported autonomy and self-reliance with their children were videotaped. Activities that parents and children participated in included building/stacking toys, playing with animal toys/hand puppets, drawing together, matching block patterns, sorting and sequencing story cards, playing card games, and participating in a discussion activity (fathers discussed rules regarding what children and parents should do, while mothers discussed the best route around a town map). Whether parents respected and supported children's actions in a positive, non-hostile manner was noted using a 7-point global rating scale. Obtained composite scores were then analyzed resulting in moderate stability of parental sensitive support for children's autonomy. Classroom observations of children's self-reliance were conducted using the Classroom Observation System for First and Third Grade, an upward extension of the Observational Record of the Caregiving Environment (ORCE). Observations focused not only on the classroom, but the child's experiences and behaviors in the classroom. Using a 7-point scale from low to high self-reliance, the child was rated on the degree of displaying personal initiative, self-regulation, autonomy, persistence, and

engagement. Mothers rated their children's effortful control at 4 ½ years using the Children's Behavior Questionnaire as a means of describing children's temperament given different situations. Children's reading and math achievement in grade three was assessed using the Woodcock-Johnson Letter Word and Applied Problems subscales. The study intended to focus on parent-child interactions as an important readiness factor other than a child's academic and social competencies. The results of the study in developing autonomy and self-reliance in children was as follows: Mothers' and fathers' support for autonomy was significantly associated with grade three reading and math achievement for boys only. Fathers' support for autonomy in the transition to school had a significant effect on boys' achievement more than the mothers' support for autonomy. Results signify that interactions between parents and children are an important aspect contributing to the development of social and emotional skills that affect later achievement.

In an effort to provide current data on school readiness skills of preschool children, O'Donnell (2008) completed a qualitative study sponsored by the National Center for Education Statistics (NCES). This is the second NCES collection that focused solely on the topic of readiness. Different than West et al.'s (1993) study for the NCES which pertained to parents' and teachers' readiness beliefs, this study focused on the actual readiness skills demonstrated by children. A new set of data was collected from a national sample of 2,633 parents of preschoolers age three through six. Parents participated in the National Household Education Survey (NHES) from January through May 2007 by completing the School Readiness Survey, which addressed items such as the participation of their children in preschool or other type of center-based care, what

parents did to prepare their children for kindergarten, family activities with children in and outside the home, and children's developmental accomplishments and difficulties related to emerging literacy and numeracy. Survey results indicated that 58 percent of children attended some type of preschool. Parents reported on the importance of various school readiness skills. Results included: teaching the alphabet 56%, teaching numbers 54%, teaching children how to read 45%, and knowing how to hold a pencil 41%. The percentage of children who actually demonstrated various school readiness skills was as follows: speech was understandable to a stranger 93%, hold a pencil with their fingers 87%, count to 20 or higher 63%, write their first name 60%, recognize all letters of the alphabet 32%, and read written words in a book 8%. The ability of children to recognize all letters of the alphabet varied by age with more letters recognized by older children: 59% of 5- and 6-year-olds not yet enrolled in kindergarten, 38% of 4-year-olds, and 17% of 3-year-olds. Knowing that 17% of 3-year-olds could recognize all letters of the alphabet provided evidence that caring adults both at home and in preschools provided consistent exposure to and interactions with print. When parents were asked how frequently they read to their children, 40% of parents from low socioeconomic status read on a daily basis while 60% represented other parents. When comparing results from the School Readiness Survey administered in 1993 to the results in 2007, teaching the alphabet was equally important to parents at 58% and 56% (O'Donnell, 2008). Results from West et al.'s (1993) and O'Donnell's (2008) studies found that parents continue to have a strong belief in the importance of preparing their children academically during the preschool years. Preparing children with various early literacy and numeracy skills helps build a solid academic foundation. An integral part of preparing children cognitively for

school is the support children receive from adults. Without consistent academic exposure and the involvement of caring adults, children would lack the cognitive readiness skills to be successful in school.

Hartas' (2011) study focused on how parental support affected children's social-emotional competence, language, and early literacy skills prior to school entry. Specific attention was placed on socioeconomic status and maternal educational qualifications. Using data from the Millennium Cohort Study (MCS), a national longitudinal birth cohort study, the sample for the study consisted of 15,600 singleton cohort children. Parent interviews were conducted when the child was age three and again at age five. Teachers rated children's social and academic progress at the end of the first school year using the Foundation Stage Profile (FSP). The FSP gathered data specific to children's personal, social, and emotional dispositions, attitudes, and development, in addition to language for communication and thinking, linking sounds and letters, reading and writing. Results indicated that regardless of socioeconomic status, over ¾ of parents supported their children with homework and engaged in a variety of learning activities with their children, such as playing music, storytelling, learning the alphabet, rhymes and songs. About half of the parents read daily to their children. The frequency with which parents read to their children had a modest effect on communication, language, and literacy skills. Children of educated mothers had literacy competence on average six months ahead of others. When taking socioeconomic factors into consideration, there was a stronger effect on children's language and literacy skills than on their social-emotional competence. As with O'Donnell's (2008) study, exposure to print through book reading experiences continues to be an important element when developing

children's basic early literacy skills. Socioeconomic status has been found in both O'Donnell (2008) and Hartas' (2011) studies to affect children's academic preparation for school.

Research on children's demonstrated readiness skills revealed communication, pre-reading, and emergent literacy as precursors to school success. A child's behavioral style, personal, social, and emotional development was also critical to school success. When looking at the whole child, each area of development contributed to preparing for children's experiences in a school's learning environment. According to kindergarten teachers surveyed in the 1993 study conducted by West et al., children demonstrated readiness for school when they communicated their needs, wants, and thoughts, and approached learning with enthusiasm and curiosity. Having quality experiences prior to school entry set the stage for children's later experiences. Research on parental support important for transitioning to formal school found literacy-rich environments to benefit children's language and early literacy development. Reading aloud was an activity parents often chose to support their children's language and early literacy development. A benefit of reading books aloud was to expose children to varied vocabulary and build background knowledge that may not be part of their daily experiences. Mediation was evident as parents interacted with their children to support autonomy and self-reliance in an effort to develop children's social adjustment skills. Children's social adjustment in the classroom was found to affect their future school progress. Parent involvement with children's learning, while taking socioeconomic status and parents' educational attainment into account, was found to have an influence on children's competencies. Quality time spent between parents and children communicated the importance of

learning and reinforced positive behaviors. Quality time also showed caring adults acting as positive role models for children. The way in which adults approached different aspects of learning within children's early learning environments affected the development of readiness skills and helped to ease the transition to formal school.

Summary on School Readiness

A review of literature on school readiness revealed a mix of beliefs from parents and teachers about what children should know and be able to do in hopes of easing the transition to formal schooling. Each belief, however, is important and relevant in advancing children's development for later school success. Children's social, behavioral, as well as, academic and cognitive skills were noted as the primary indicators of competence. Studies indicated that academic related tasks have and continue to be most important to parents when it comes to school readiness. Teachers did not stress academic proficiency as they are prepared to meet children where they are academically upon school entry and build upon those skills. Teachers have the knowledge of different approaches to learning that support children's interests which affects their overall development. Building school readiness skills is a product of opportunity and interactions (La Paro & Pianta, 2000). Given positive role models, children can learn skills that will lead to success in school. Parents stressed the importance of children demonstrating self-help skills and independence. Parents and teachers believed the ability to communicate with others throughout the day would not only develop cognition, but also promote social interactions and close relationships with others. Both parents and teachers also felt students' behaviors in the sense of self-control and ability to pay

attention were important readiness factors. Self-regulation was identified by Vygotsky as a higher mental process that contributes to building cognition.

Developing children's repertoire of skills during the preschool years makes it easier to transition to school. Without the attainment of various school readiness skills, parents worry their children will enter school with a readiness gap that may soon become an achievement gap. Therefore, school readiness skills play an important role in shaping children's subsequent achievement trajectories. The challenge of reality is that not every child will develop each readiness skill prior to school entry and particularly not at the same time. The goal surrounding school readiness is to decrease inconsistencies between what parents and teachers believe to be important. There needs to exist a shared vision of school readiness that promotes enriched opportunities and interactions, while keeping in mind what is developmentally appropriate for children. Vygotsky's concept of mediation was represented throughout the studies by having supportive adults build caring relationships with children. Frequent interactions among children also promoted learning which led to further development. Helping to prepare children for the transition to school is a critical time that deserves ongoing attention.

Quality Preschools

Working as partners with families, preschools are a means of supporting a critical period in a child's development of cognitive, social, and emotional skills and significant life transition from home to formal schooling. Vygotsky's theory focused on interactions that contributed to building all facets of a child's development. Having quality preschools is beneficial in promoting children's readiness skills and increases the chances for later school success. The following research on quality preschools focused primarily

on (a) elements of quality preschool environments, including interactions between teachers and children, (b) the effect of quality preschools on children's skill development, and (c) whether the effects of quality preschool experiences were maintained through the elementary years.

Historical Background Context

As early as the 1960's and 1970's, notable quality preschool programs such as High Scope Perry Preschool, Head Start, Chicago Child-Parent Centers, and the Abecedarian early intervention program have been found to benefit young children's development and learning. Effects of these quality early learning experiences included better social and academic progress in the early elementary school years, fewer grade retentions, fewer special education placements, and increased graduation rates (Guernsey & Mead, 2010; Reynolds, Temple, & Ou, 2003). Results from a 2002 Pennsylvania Early Childhood Quality Settings Study indicated a declining trend in quality child care facilities since the 1990's (PA OCDEL, 2010). Data were collected from 372 early care and education providers, which found only 20% rated good, while 80% of care in Pennsylvania was rated minimal or adequate (Fiene et al., 2002). Results triggered a sense of urgency to improve the quality of preschool experiences.

As a commitment to continuous quality improvement, Pennsylvania established its own quality rating system in 2002, the Keystone STARS Early Learning Keys to Quality. Keystone STARS, also known as a Quality Rating and Improvement System (QRIS), is a voluntary systematic approach to assess, improve, and communicate the level of quality in early education programs. Preschools participating in Keystone STARS may enter with a Start with STARS level and progress with earning a STAR 1 through STAR 4 rating (PA OCDEL, 2010). STAR 4 facilities may also be accredited by

the National Association for the Education of Young Children (NAEYC). NAEYC Accreditation is a voluntary national program that provides an evidence-based standard for preschools seeking to make quality improvements (McDonald, 2009). Child care facilities are awarded a designated STAR level after being assessed by a Regional Key representative on four Performance Standards: (a) Staff Qualifications and Professional Development, (b) Learning Program, (c) Partnerships with Family and Community; and (d) Leadership and Management. The Staff Qualifications and Professional Development standard addresses items such as the educational attainment of staff, number of professional growth and development activities required annually, and annual clock hours of training required. The Learning Program standard involves child observations, an assessment on the environment, a learning curriculum, and the Pennsylvania Learning Standards. Partnerships with Family and Community details ways to promote collaboration, such as parent conferences, transition meetings, and group activities. The Leadership and Management standard includes the following staff benefits, paid lesson planning time, performance evaluations, a salary scale, staff meetings, a parent handbook, Personnel Policy Manual, and various plans to manage daily operations. The standards are organized into four STAR levels that build upon each other (see Appendix A for a summary of STAR Performance Standards). Bi-annual assessments are conducted in all STAR 2 facilities moving to or renewing a STAR 3 and 4 by reliable ERS (Environment Rating Scale) assessors employed by the Office of Child Development and Early Learning (OCDEL). Results identify areas of high quality and areas where improvement is warranted (PA OCDEL, 2010).

The Pennsylvania Office of Child Development and Early Learning (2010) reported on a study conducted in 2009-2010 with preschools participating in Keystone STARS as a STAR 3 or STAR 4. The highest level that can be attained is a STAR 4. The purpose of the study was to determine the effect quality preschool environments based on a STAR level had on children's skills, knowledge, behaviors, and academic achievements. Pennsylvania's Early Learning Network collected data on 8,464 children in the fall and 9,268 children in the spring based on teacher observations using the Work Sampling System and Ounce Scale System. Indicators were scored as either "not yet," "in process," or "proficient" for each of seven domains: (a) personal and social development, (b) language and literacy, (c) mathematical thinking, (d) scientific thinking, (e) social studies, (f) the arts, and (g) physical development and health. Results showed a significantly higher percentage of preschool children scoring "proficient" in the spring than in the fall. For example, 63% of preschool children in a STAR 3 scored "proficient" in the spring when compared to 33% of preschool children in a STAR 3 who scored "proficient" in the fall. Results also found a greater percentage of "proficient" children for STAR 4 participants than STAR 3 participants in the spring, suggesting that participation in a higher STAR level leads to better child outcomes. Results provided evidence that with time and exposure in a quality preschool environment, children gained knowledge and skills to advance their development and learning in various domains. Evidence from this study depicted Pennsylvania as developing a worthwhile quality rating system for preschools that bring immediate results in children's growth. Having STAR ratings sets apart differences that quality preschools work hard to obtain.

Knowing the STAR rating each preschool received informs parents about the quality early learning opportunities available to their children.

Elements of Quality Preschool Environments

When examining the overall quality of preschool environments, elements of both *structural* and *process quality* were identified (see Figure 1). *Structural quality* is essential and often measured by the state to fulfill established regulations which maintain licensure through the Department of Public Welfare. Class size, teacher-child ratios, square footage, the educational attainment of staff, compensation, type of training, and program services offered to parents and families are example elements of structural quality (Espinosa, 2002; Mashburn, 2008). *Process quality* consists of both *physical* and *social elements* that directly benefit children and address the social-cultural context to mediate learning and advance development. *Physical elements* of process quality include the availability of materials and learning opportunities to enhance children's learning, while *social elements* of process quality involve daily social interactions and developmentally appropriate strategies and activities which engage children.

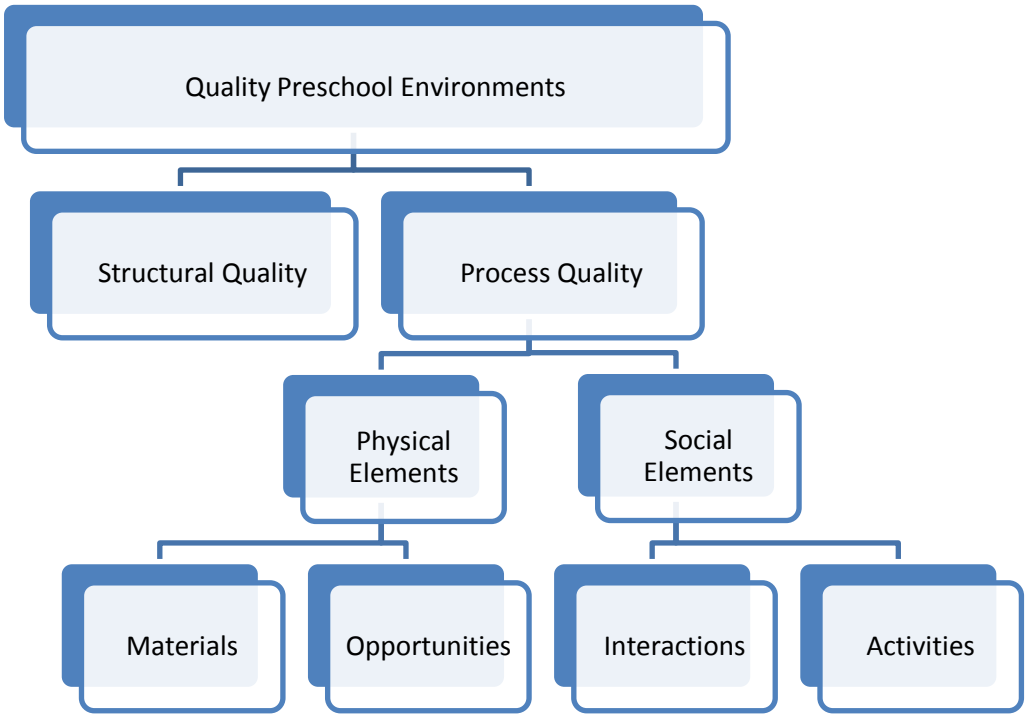

Figure 1. Quality preschool environments.

Principles of developmentally appropriate practice are based on a constructivist perspective of intellectual development (Bredekamp, 1997). Constructivists like Vygotsky believed development was stimulated by children's interactions with the world around them and the people they encountered (Marshall, 2003). Knowing the type and amount of support adults can provide while facilitating children's learning is key to understanding developmentally appropriate practices. Implementing developmentally appropriate practices promotes development by being responsive to each child's needs (Bredecamp & Copple, 2009). Together, physical and social elements of process quality support developmentally appropriate practices and can be assessed using various measurement tools. Preschools looking to establish or validate a STAR rating are required to have these elements of quality measured. The research was primarily focused on the process quality within preschool environments, because it spoke to how learning is

mediated for student success. The following studies identified various elements of process quality within preschool environments. Specific attention was placed on teacher-child relationships and interactions within a quality preschool setting.

Õun (2009) studied the quality of early learning environments in preschool facilities operating a Step by Step program and preschool facilities not operating a Step by Step program. The Step by Step program emphasized the need for child-centered education, a curriculum based on a developmental approach, and enabled children to be active and make choices. Participants included 15 groups in the Step by Step program and 15 groups not in the Step by Step program all located in Estonia. Observations occurred using the Early Childhood Environment Rating Scale-Revised (ECERS-R), followed by a teacher interview to discuss observation results. Scores ranging from 1-7 for the 7 subscales were compared to total scores for both environments. Results found the process quality of the learning environment in Step by Step groups to be significantly higher for 11 of 35 ECERS-R items than the quality of environments not involved in the Step by Step program. Main differences were in relations between teachers and children and group activities. Step by Step groups created a high quality play environment evidenced by an ECERS-R mean score of 4.93 for *Room arrangement for play* (compared to a mean score of 3.93 for the other groups). *Greeting and departing routines* were higher for Step by Step groups (5.87) when compared to the other groups (4.53). Teachers in the Step by Step groups demonstrated better skills when communicating with children. The ECERS-R score for *Informal use of language* with Step by Step groups was 5.67 and 4.27 for the other groups. *Encouraging children to communicate* scored 5.47 with Step by Step groups and 4.40 with the other groups.

Activities created to help children develop and explore art, blocks, sand/water, and dramatic play were all higher for Step by Step groups. Mean scores for the entire *Interaction* area were high in quality for both Step by Step (5.68) and groups not in the Step by Step program (5.41). A statistically significant difference was noted with *Staff-child interaction* (Step by Step groups 6.00, other groups 5.07). *Group time* scored high (5.73) with Step by Step as compared to the other groups (3.27) mainly because the program focused on group work in activity centers. Results of the study confirmed child-centered programs that apply developmentally appropriate curricula with lots of group activities and opportunities for frequent, positive interactions involving communication are of higher process quality than other preschool classrooms.

A case study was conducted by Kugelmass and Ross-Bernstein (2000) looking specifically at teacher-child relationships and interactions in a university-based quality preschool program accredited by NAEYC. Observations were conducted along with an in-depth teacher interview to gain the teacher's individual perspective regarding interactions with children and how it influenced practices. The lead teacher also reflected on her relationship with children by writing in a journal. Teacher-initiated interactions were found to be guided by information about the child, referred to as child referencing. The teacher also interacted by responding to events and activities initiated by a child. Additionally, non-verbal interactions contributed to the quality of relationships between the teacher and children. The following factors were found to influence the teacher's practice: previous professional experiences, education and training, understanding the importance of developmental theories in early childhood education, previous experiences with individual children, knowledge of children's personal situations, and the effect of

working in the context of a team resulting in inconsistent interactions with children. Interactions with children were found to be very child-centered and based upon the teacher's experiences.

Research on elements of quality preschool environments found that adults working with young children need to have the knowledge of and ability to apply approaches to learning that are developmentally appropriate and focus on the child. As with Kugelmass and Ross-Bernstein's (2000) study, the structural quality element of a teacher's educational attainment and training in early childhood education directly affected the elements of process quality found in preschool environments. Interactions and experiences in a quality preschool environment were the result of teachers understanding how young children learn. While the structural quality is important to the overall quality of preschool environments, studies placed more emphasis on the elements of process quality. Process quality focused on what children learned and how children learned. The art and science of teaching was found within the observed elements of process quality. Quality learning environments should offer an abundance of opportunities through its materials and activities that promote play and allow children to explore while working with others. Frequent, positive teacher-child interactions need to occur daily. All of these characteristics describe both physical and social elements of process quality essential to children's skill development.

Quality Preschools' Effect on Children's Skill Development

Parents who choose to enroll their children in preschool want to know how the experience will prepare their children for school. A high quality preschool drives increased school readiness across multiple developmental domains. The educational

content and play experiences provided should not only include language, multiple early literacy and mathematics skills, but attend to children's social, emotional, and physical development. Vygotsky supported having a variety of social opportunities and mediated learning experiences that provided the support children needed to build school readiness (Carlton & Winsler, 1999). Supportive environments were shaped by modeling and frequent positive reinforcement (Holdaway, 1979). The social origin of Vygotsky's theory was based on continuous communication and collaboration that led children's development (Eun, 2010). The following studies examined associations between the structural and process quality of preschool environments and children's academic, language, early literacy, and social skill development. Attention focused on the social and physical elements of process quality. More specifically, the quality of interactions between teachers and children was studied to determine its effect on higher mental processes as evident with academic growth and social competence.

Mashburn et al. (2008) conducted a study examining the relation of children's academic, language, and social skill development with various measures of preschool quality. Participants included 2,439 children enrolled in 671 pre-k classrooms in 11 states. Observations were conducted using the Early Childhood Environment Rating Scale-Revised (ECERS-R) to assess the process quality of classroom environments. Preschool programs were also evaluated for meeting nine standards of structural quality proposed by the National Institute for Early Education Research (NIEER), which included educational attainment of staff, class size, curriculum, and program offerings. An observational measure of teacher's emotional and instructional interactions with children was conducted using the Classroom Assessment Scoring System (CLASS).

Children's academic and language skills were assessed using various measures at the beginning and end of their preschool year. The Peabody Picture Vocabulary Test (PPVT) was used to measure children's receptive vocabulary. Children's expressive language was measured using the Oral and Written Language Scale (OWLS). Subtests from the Woodcock-Johnson-III Test of Achievement were also administered. Teachers rated children's social competence and problem behaviors using the Teacher-Child Rating Scale (TCRS). Results of the study found that elements of process quality within preschool environments positively associated with children's expressive language skills. The quality of teachers' emotional interactions was not associated with the development of preschool children's academic and language skills, while the quality of teachers' instructional interactions was positively associated. The only indicator of structural quality recommended by NIEER that was found to be positively associated with children's development of social competence was teachers having a bachelor's degree, not having specialized training in early childhood education. Overall results of the study found elements of structural and process quality relating to different aspects of children's academic, language, and social skill development during the preschool years. Process quality in the form of teachers' instructional interactions related positively to children's academic and language skills; whereas, structural quality in the sense of teachers' specific educational attainment positively related to children's social skill development.

Mashburn (2008) conducted a study to determine if there were associations between the structural and process quality of preschool environments and children's development of academic, language, and early literacy skills at the end of preschool. Specific attention focused on the social and physical aspects of process quality.

Participants included 540 four-year-old children who participated in the Georgia Early Childhood Study (GECS), a longitudinal study involving a variety of full day preschool experiences within 124 preschool programs in Georgia (Georgia Pre-Kindergarten, Head Start, and private preschool programs). Data were collected in three phases. During the first phase from September to October 2001, children were administered the Letter-Word Identification and Applied Problems subtests of the Woodcock-Johnson-III Test of Achievement, in addition to the Peabody Picture Vocabulary Test-III (PPVT-III) and the Expressive Language subtest of the Oral and Written Language Scales (OWLS) to assess language skills, while the Story and Print Concepts was used to assess emerging literacy skills. Parents completed a survey measuring child and family characteristics at the child's entry to preschool. The second phase from January to February 2002 involved observations of the process quality within preschool classrooms using the Early Childhood Environment Rating Scale-Revised (ECERS-R), Assessment Profile, and the Caregiving Interaction Scale (CIS). The third phase, which took place from April to May 2002, included the administration of post-tests of the battery of language, early literacy, and academic assessments. Results of the study found the structural quality element of type of preschool program and the demographic factor of race to be significantly associated with children's language skills, specifically with white children scoring higher. Children enrolled in Georgia Pre-Kindergarten programs scored higher than Head Start children. These findings were also consistent with literacy results. Early literacy skills were higher with girls and children not represented from low-income families. With regards to process quality, high-quality social environments were positively associated with children's academic and early literacy skills. The quality of the physical

environment had an effect on the literacy performance of poor children, in addition to the literacy skills of non-white children.

Herrera, Mathiesen, Merino, and Recart (2005) conducted a study in Chile to examine the process quality of preschool environments and the impact on children's academic outcomes. One hundred twenty preschool environments in Chile were selected having a total of 526 children participating. The Early Childhood Environment Rating Scale (ECERS) was used to measure process quality on a scale of 1-7 within various categories. Vocabulary comprehension was measured with the Test de vocabulario en imágenes (TEVI), while Pruebas de Lectura y Lenguaje escrito (PPLE) was used to measure reading comprehension. Results obtained with the ECERS found the majority of preschool environments (75) to fall in the medium or average range of quality. Personal care routines, by means of meeting basic care needs, were found to have high quality. The use of language and direct interaction of adults with children was found to have higher quality when compared with the experiences children had with learning materials, equipment, and space without adults being involved. Results found various social elements of process quality within preschool environments. When comparing quality preschool ratings with children's academic achievement, significant associations were made. Only an average of 7.65% variance was found given the two achievement measures and preschool quality. Even when academic data were collected three years later, a significant association between preschool quality and child development was evident.

Cunningham (2010) conducted a study to determine the extent to which the process quality within preschool environments was related to children's early literacy

development. Participants included 428 preschool children from 24 public preschool environments in a large, urban Midwestern school district. Over 80% of the participants qualified for free or reduced meals. The Early Childhood Environment Rating Scale-Revised (ECERS-R) was used in early May to assess the process quality of the district's preschool environments. The Classroom Observation section of the Early Language and Literacy Classroom Observation (ELLCO) Toolkit was used to assess the process quality of literacy environments, including the curriculum focusing on early language and literacy development. The Teacher Rating of Oral Language and Literacy (TROLL) was used to assess children's essential early literacy skills of language, reading, and writing by the end of May. ECERS-R results reported minimal process quality, while ELLCO results identified the preschools' literacy environments as having basic process quality. Mean TROLL results fell within the 25th percentile for children's early literacy skills. Results indicated that the process quality of preschool environments was strongly related to the process quality of preschools' literacy environments. Literacy environment quality and children's early literacy abilities were also related as higher ELLCO results correlated positively with higher TROLL scores. The study found a negative impact on children's early literacy development when taking low socioeconomic status into account. The literacy environments studied were found to provide developmentally appropriate activities in which children could (a) make choices, (b) explore conceptual ideas, (c) experiment with social and academic language, (d) exchange ideas with peers and adults, and (e) make connections across an integrated curriculum. Therefore, concluding that developmentally appropriate activities can contribute to the process

quality of a preschool's environment and subsequently affect children's early literacy development.

Curby et al. (2009) studied the quality of interactions between teachers and students and its effect on pre-kindergarten children's academic growth and social competence. Participants included 701 teachers and 2,028 children. Children were assessed during the fall and spring of their pre-k year using the Peabody Picture Vocabulary Test-III (PPVT-III), a test of receptive vocabulary, and the Woodcock-Johnson III-Applied Problems. Classroom observations were conducted in the spring using the Class Assessment Scoring System (CLASS). The CLASS measured the quality of teachers' interactions with children in three domains: Emotional Support, Organizational Support, and Instructional Support. When children were in kindergarten, teachers completed the Teacher-Child Rating Scale (TCRS), a behavior rating scale measuring children's social competence. Children in classrooms with the highest level of instructional support showed the greatest academic gains. Children in classrooms with the highest emotional support were rated by their kindergarten teachers as highest in social competence. Results of the study found higher quality teacher-child interactions to be associated with both higher levels of social competence and higher student achievement. Overall, the role that teachers played in supporting and interacting with preschool children contributed to the process quality of the environment and affected children's academic growth and social competence.

Research on quality preschool environments reported variations on the effects elements of process and structural quality had on children's academic, language, early literacy, and social skill development. Studies revealed the importance of proximal

process, the type of teacher-child interactions that children experienced when examining the impact on children's development and learning. Having positive teacher-child interactions facilitated the learning process allowing young children to learn more when teachers interacted with them in supportive ways. Both Herrera et al. (2005) and Curby et al.'s (2009) studies found quality teacher-child interactions to produce positive language and academic outcomes for children. Without opportunities for mediated learning by more knowledgeable adults, the use of language and further development of skills was limited. And when Herrera et al. (2005) studied long-term effects of quality preschool environments, positive outcomes still existed.

Various factors, such as race, gender, and socioeconomic status, have been determined to affect children's skill development, as demonstrated in Mashburn (2008) and Cunningham's (2010) studies. Literacy skill development was found to be negatively associated with children from low socioeconomic families due to parents' availability of resources being less and parents' lack of knowledge in how to prepare children with school readiness skills. Having quality physical elements within preschool environments provided the necessary space, materials, and opportunities for teachers to promote children's skill development, which benefitted children with low socioeconomic status.

Having quality physical elements is important, but what happens within a preschool environment is more important. To be effective, preschool programs need to identify and be responsive to children's current level of functioning by having caring and supportive adults to guide and support their continued development and learning. Vygotsky's belief of providing adequate adult support to enhance children's learning is

dependent on having knowledge of developmentally appropriate skills and activities that mediate learning within a child's Zone of Proximal Development. Teachers with professional training in child development and early childhood education increases the likelihood children will engage in developmentally appropriate practices, but there is no guarantee (Brown, 2008). As with the implementation of developmentally appropriate practices, demonstrating quality teacher-child interactions may or may not be associated with teachers' educational attainment. Mashburn et al.'s (2008) study on structural and process quality found that highly trained and experienced teachers only sometimes contributed to the quality of interactions and care given to children.

Teachers may have the knowledge of early childhood education but may not implement best practices supported by the National Association for the Education of Young Children (NAEYC) that are beneficial to children's development. In the case of Cunningham's (2010) study, preschool environments were examined closely to determine whether children were learning basic language, reading, and writing skills. Measuring the quality of a preschool's language and early literacy environment gave insight to several kinds of developmentally appropriate activities. Exploration, problem solving, using language to communicate, and making connections all contributed to children's quality experiences. To provide children with the highest quality preschool experiences, the physical elements together with the social elements of process quality should be associated with positive developmental outcomes for children. With quality learning beginning at an early age, preschool children benefit from having positive and caring relationships with adults and other children, receiving carefully planned, intentional

guidance and assistance, and being able to encounter and explore many interesting things in a quality preschool environment.

Effect of Quality Preschool Experiences Over Time

Quality preschool environments seek to provide experiences that will eliminate school readiness gaps existing between children. Having a solid foundation of academic, language, various early literacy, and social skills increases children's likelihood for success in the early elementary school years. The development of language in the early years plays an important role in the development of what Vygotsky referred to as higher mental processes, such as imagination and abstract thinking. For example, quality preschool environments assist children with moving from regulation by others to self-regulation (Yang, 2000). Self-regulatory development is important in the development of academic skills which involve other higher mental processes. Development is a continuous process that can have lasting effects given quality learning environments right from the start (Whitebread, Coltman, Jameson, & Lander, 2009). The following studies examined the quality of care in preschools and how it related to children's language, cognitive, socioemotional skills, and work habits over time. The period of time studied for longitudinal effects was up to five years, measuring results in 2nd and 3rd grades.

Research conducted by Peisner-Feinberg et al. (2001) as part of a Cost, Quality, and Child Outcomes (CQO) in Child Care Centers Study focused on measuring the process quality of care received in preschools and longitudinal assessments of children's language, cognitive, and socioemotional functioning over a 5-year period. Participants included 733 children in 167 classrooms from 160 preschools in four states. Preschool observations were conducted using four measures to determine the process quality of care

based on classroom practices. The Caregiver Interaction Scale (CIS) was used to measure teacher sensitivity. The Adult Involvement Scale (AIS) was used to measure teacher responsiveness. The UCLA Early Childhood Observation Form (ECOF) was used to measure child centeredness. The Early Childhood Environment Rating Scale (ECERS) was used to measure the overall process quality of the preschool environment. The observation tools used to measure classroom practices during kindergarten and second grade included a shortened version of the ECERS and a modified version of the Instructional Environment Observation Scales (IEOS) respectively. Children's cognitive and socioemotional functioning were gathered from individual assessments and from teacher ratings each year. Receptive language ability was measured using the Peabody Picture Vocabulary Test-Revised (PPVT-R), while pre-academic skills were measured using the Woodcock-Johnson Tests of Achievement-Revised. Teachers rated children's social and cognitive skills each year using the Classroom Behavior Inventory (CBI). Teachers rated their relationship with each child yearly using the Student-Teacher Relationship Scale (STRS). Preschool experiences were found to influence cognitive and socioemotional development somewhat differently. The process quality of observed classroom practices was found to strongly relate to children's cognitive skills, whereas ratings of teacher-child relationships were related to both cognitive and social skills. Overall results revealed longitudinal effects for receptive language ability (match picture to a spoken word), math ability, cognitive and attention skills, problem behaviors, and sociability, indicating that children who experienced quality preschool care were more advanced in their developmental outcomes extending through second grade.

The NICHD Early Child Care Research Network (2000a) conducted a large study involving 1,364 families to examine how physical and social elements of process quality, type of child care, and amount of child care related children's cognitive and language development with the acquisition of school readiness skills. The quality of available resources and staff to child interactions was observed within various settings (child care center, home, laboratory). Results indicated that elements of process quality had a larger impact than the type of care or amount of care children received. Care in a child care center was noted to have a larger impact than care within a home as determined by the caregivers' interaction and language stimulation. Positive care in the form of language stimulation resulted in higher scores on both language tests and a school readiness test. A follow-up study was conducted by NICHD Early Child Care Research Network (2005) to determine whether the earlier effects would be maintained through grade three. A total of 772 children were included in the study. Children were administered four subtests from the Revised Woodcock-Johnson Psycho-Educational Battery. Caregivers and teachers completed a Student-Teacher Relationship Scale: Short Form to provide information on the quality of their relationships with children. Children's social skills and behavior problems were also assessed by parents, caregivers, and teachers throughout children's development. Results found that elements of process quality correlated positively with children's cognitive achievement and with teachers' ratings of children's social skills and work habits. Children had significantly higher math, vocabulary, and memory skills. Findings continued to show positive correlations with the process quality and children's academic performances through third grade.

Research on whether the effects of quality preschool experiences were maintained over time found positive results with all areas of children's development. Preschool practices deemed to be of high quality have been found to affect children's receptive language and basic math skills. Building vocabulary through the reciprocal exchange of language experienced during play and through conversations, in addition to providing quality materials and opportunities as part of the instructional preschool environment enhanced children's abilities to build their cognition. Quality relationships between teachers and children were also instrumental in children's quality preschool experiences and developmental outcomes. Adults served as positive role models and facilitators, which affected how children behaved. Guiding children through various social situations and when problem behaviors arose helped develop problem solving skills that contributed to children's growth. Continued exposure to elements of process quality, including practices within a quality preschool, affected the development of cognitive and social skills that contributed to school readiness and later school achievement.

Summary on Quality Preschools

A review of literature on quality preschools revealed that while elements of both *structural* and *process* quality are important when examining children's early learning experiences, the *physical* and *social* elements of *process* quality are often measured and were found to directly benefit and impact children's development. Quality preschools provided an abundance of opportunities through its physical materials that promoted play, rich language experiences with adults, and situations where learning occurred. Opportunities to explore and problem solve promoted what Vygotsky referred to as higher mental processes that attributed to children's skill development and readiness for

school. *Social* elements of *process* quality involved activities that were child-centered and developmentally appropriate. Other *social* elements of *process* quality within preschool environments focused on interactions among adults and children. Positive relationships and frequent communication contributed to children's development of not only social and emotional skills, but cognitive and academic skills as well. Opportunities to develop language and build children's vocabulary were plentiful.

For children to demonstrate school readiness, quality early learning experiences needed to be available that would build their readiness skills across all developmental domains. Various studies that measured children's academic, language, early literacy, and social skill development found results to be affected by quality preschool experiences. Vygotsky's social cultural theory of learning was evident throughout quality preschool experiences with the abundance of opportunities and interactions among adults and children. Teachers' educational attainment was the only *structural* element of quality examined in the sample of quality preschool studies, but was inconsistent with its results and how it affected the *process* quality of activities and interactions within preschool environments. When examining *process* quality, some studies examined other factors, such as race, gender, and socioeconomic status, to determine its effect on children's skill development. There were many aspects of a quality preschool program that contributed to children's development and learning. Establishment of Keystone STARS was one example of Pennsylvania's efforts to provide quality early learning experiences based on what research has shown to benefit children. By examining quality preschools, specifically the elements of *process* quality and how it affected children's development upon entry to kindergarten and beyond, early childhood

educators continue to build a solid foundation and increase children's likelihood for success in school.

Early Literacy Development

Preschool teachers are key players in preparing children with the necessary readiness skills to be successful in a kindergarten environment. Building children's school readiness skills early can have a positive effect on later school achievement. As such, including basic academic skills as well as social and emotional skills in children's daily preschool routines is critical. Early literacy is constantly being developed through the teaching and learning of basic academic and behavioral readiness skills. Early literacy is the development of a child's language, pre-reading, and writing skills. Developing early literacy skills at a young age forms the foundation of learning for a child's future reading success (IRA, 1998). Every parent wants their child to do well in school. Being able to read is necessary for continued academic growth and success in school. There are multiple representations of literacy with the ability to read being one of them. Having literacy knowledge and being able to apply it is a primary life skill that enables one to navigate through life's experiences. Developing language, pre-reading, and writing skills, therefore, becomes a necessary area of children's development in quality preschools. Research on the development of children's early literacy skills focused primarily on (a) environments that promoted language and early literacy, (b) knowledge of early childhood educators in promoting language and early literacy development, (c) strategies and activities that supported key aspects of early literacy, and (d) the relationship between children's early literacy experiences and later literacy achievement.

Historical Background Context

To develop children's early literacy skills, one must be familiar with the various components of reading. The National Reading Panel (NRP) produced a report, *Teaching Children to Read,* which identified five important components of reading: phonological awareness, phonics, fluency, comprehension, and vocabulary (NICHD Early Child Care Research Network, 2000b). However, the NRP report did not specifically focus on emergent literacy for children birth to age five. Early Reading First (ERF) later narrowed the national focus on reading for preschool programs to provide instructional activities in four areas: (a) phonological awareness, (b) print awareness, (c) alphabet knowledge, and (d) oral language. ERF was an initiative created by the *No Child Left Behind Act (NCLB)* and the *Elementary and Secondary Education Act (ESEA)* aimed at creating early childhood centers of excellence that strive to prepare young children with the necessary language, cognitive, and early reading skills to be successful in school (Jackson et al., 2007). With pre-reading skills being taught in preschool programs across the nation, it is important to examine the elements of process quality within preschool environments and how early literacy skills are being promoted. The collaboration and social supports provided in quality preschool environments was key to Vygotsky's belief on child development.

Language and Early Literacy Environments

Birth through age eight, also known as the early childhood years, is the most important period for literacy development (IRA, 1998). The acquisition of literacy is a developmental continuum that begins in the home with the ability to communicate and continues in the classroom, both preschool and kindergarten. Communication by means of speaking, reading, and writing sets the stage for later academic achievement. On

average, children acquire more than 3,000 words in their vocabulary by the time they enter formal schooling. Research has revealed that when children do not develop language proficiency during their first years of life, they are six times more likely to experience reading problems in school (Graves, van den Broek, & Taylor, 1996). Children benefit from having a rich language and early literacy environment to develop early literacy skills. Effective learning environments are purposeful environments that have a variety of materials and activities that stimulate children's acquisition of early literacy (Holdaway, 1979). Participating in play is a prime opportunity to develop speech among various other skills. Children use concrete objects to develop vocabulary, then progress to abstract thinking (Bodrova & Leong, 2005; Gredler, 2012). Vygosky's theoretical concept of mediation involves an interactive nature of teaching and learning early literacy. Adults optimize children's potential to learn in the Zone of Proximal Development (ZPD) by incorporating dialogue into instructional practices and stretching children's thinking to apply higher cognitive functions (Eun, 2010; Gredler, 2012). The following studies examined how home, preschool, and kindergarten learning environments promoted the development of language and early literacy.

Wasik and Hindman (2010) gathered information from families of 302 first-time Head Start children regarding effective language and early literacy practices and activities occurring in the home environment. Results from a Family Literacy Survey (FLS; Seefeldt, 2004) revealed a variety of activities for young children that occurred daily and weekly. The following play-related activities took place close to every day: listening to children, encouraging children to talk, talking with children, modeled writing, pointing out environmental print, and providing opportunities for children to scribble and

draw. Academically focused activities occurring 1-2 times per week included singing, rhyming, playing, showing children letters, reading books with children, and telling stories. Visiting the library rarely occurred. When parents were prompted about their child's favorite book, 196 parents reported that their child had a favorite book with 115 parents actually naming a specific title.

Whitehurst and Lonigan (1998) reviewed the literature on early literacy to determine what aspects supported the development of early literacy in both home and preschool environments. Within the home environment, frequent adult-child verbal interactions in the form of conversations contributed to children's language skills. Exposure to print and opportunities for shared book reading were also found to foster vocabulary development. Existing studies did not find a positive correlation between shared reading and children's development of phonological skills. Similar results were found from studies conducted in preschool environments. Data were collected from the Early Childhood Environment Rating Scale (ECERS), a commonly used measure that assesses process quality including the curriculum, environment, teacher-child interactions, and teaching practices within a preschool classroom. Teachers' behaviors were found to be instrumental in developing children's early literacy skills. Attention was focused on teachers' dramatic quality, warmth, and attempts to engage individual children during shared reading. A program of shared reading, called dialogic reading, was an example intervention found to promote growth in children's language skills. As part of dialogic reading, adults assume the role of an active listener by asking questions, adding information, and prompting children to describe in detail pictures in a storybook. The proportion of teacher and child talk during dialogic reading was significantly

associated with a higher level of children's vocabulary and story comprehension. Research also found that opportunities to engage children in writing activities had an effect on children's early literacy skills. Creating literacy-rich play settings enabled children to interact with print and writing in the form of signs and labels, functional print items like calendars, in addition to various writing materials. Studies on early literacy found various elements of process quality in both home and preschool environments that promoted children's early literacy development.

Levy (1986) conducted a study to determine whether children of kindergarten age demonstrated an increased level of language performance given opportunities for enriched sociodramatic play. Three kindergarten age children who were enrolled in a summer day care program participated in the study. There were six additional children involved as playmates during the baseline and treatment activities. Baseline data were collected by observing and audio-taping the three children for twenty-one 15-minute language samples during unstructured play. There were twenty-seven 15-minute treatment samples collected. During treatment, enriched sociodramatic play occurred with theme-related activities, increased time, space, and props, and facilitation of play. Results of the study revealed a functional relationship between enriched sociodramatic play and children's language performance. The three kindergarten children were found to: (a) use more vocabulary words specific to the defined theme of play, (b) use an increased number of words, (c) use an increased number of words indicating concepts of color, shape, number, quantity, space, and time, and (d) use language for an increased number of functions (uses). Given an adequate amount of time with quality materials, in

addition to having quality interactions with a caring adult to facilitate learning through play, children demonstrated an increased level of language performance.

Research on environments that promoted the development of language and early literacy skills found a variety of play-related and academically focused activities occurring often. As recommended by ERF, activities should focus on phonological awareness, print awareness, alphabet knowledge, and oral language when looking to prepare young children with the necessary language, cognitive, and early reading skills to be successful in school. Preschool children participating in Head Start were engaged in home activities that promoted communication, both speaking and listening skills, in addition to writing, recognizing print, and opportunities for play every week. A review of studies involving home and preschool environments provided examples of both physical and social elements of process quality evident when building children's early literacy skills. Environmental print, books, writing tools, and materials were regularly available. Daily conversations and adult-child interactions helped to develop children's language. Adults interacted in fun, encouraging ways to engage children. The role of adults in facilitating children's responses was instrumental during play experiences and more structured language-building activities like shared reading. While language and vocabulary were developed through shared reading experiences, phonological awareness was not found to be associated with reading books aloud. Enriching sociodramatic play experiences resulted in enhanced language performance. Kindergarten-aged children developed specific vocabulary related to themed play experiences and increased the number of words used during play. Both parents and preschool teachers play important roles in teaching young children the necessary early literacy skills to become successful

readers. Having the knowledge and abilities to teach and support early literacy skills within a quality preschool environment is equally important to ensure positive outcomes.

Educators' Knowledge and Facilitation of Language and Early Literacy Development

The knowledge children have of early literacy skills and their ability to use language is dependent upon adults' knowledge and abilities (Holdaway, 1979). Therefore, it is important to examine background knowledge regarding adults' knowledge and ability levels as it relates to the development and enhancement of children's early literacy skills. Adults' ability levels not only influence the type of activities children are exposed to, but also influence the richness of language and early literacy interactions with children. The development of children's early literacy is a cooperative process. Adults pose questions and assist with problem solving. Children increasingly acquire cognitive and social competencies through mediated experiences with others (Howes, 2003). The interactions adults have with children are essential for the maturation of Vygotsky's higher mental processes (Gredler, 2012). The following studies examined educators' knowledge of early literacy development, how professional development opportunities affected the quality of teacher-child interactions, and the extent that educators engaged children in literacy-building activities. Whether teachers altered the quality of their classroom literacy environments or changed classroom instruction as a result of receiving feedback about students' performance on an early literacy progress monitoring tool was also examined.

In 2008, Crim et al. conducted a study to determine early childhood educators' knowledge of early literacy development, specifically phonological awareness.

Participants included 64 teachers from 16 elementary schools in eight school districts located in Houston, Texas. All teachers worked with preschool children in public school kindergarten, prekindergarten, Head Start, or community-based preschool classrooms. Teachers were randomly chosen to participate in three years of professional development activities designed to: (a) train teams of educators with differing roles and levels of expertise, (b) provide research on children's learning and effective instructional strategies, and (c) implement research-based programs that incorporated perspectives within a variety of experience levels. A 15-item Informal Survey of Linguistic Knowledge was completed by teachers at the conclusion of their professional development. Analyzed results found early childhood teachers to have difficulty identifying basic skills related to beginning reading instruction. In the area of syllabication identification, teachers' accuracy rate ranged between 67.5% and 95%. In the area of morpheme identification, inaccuracies varied from 67.5% to 95%. Fifty-six percent of the teachers did not respond to the morpheme items. In the area of phoneme identification, the inaccuracy rate fell between 40% and 85%. Results of the study supported the need for professional development in the area of literacy. Adults need a strong sense of phonological awareness if they are to lead children's development of pre-reading skills. The gaps with teachers' overall knowledge in basic early literacy skills may need to be more fully addressed in teacher preparation programs.

Mashburn, Downer, Hamre, Justice, and Pianta (2010) conducted a study to examine the impact of a teacher professional development program on the quality of teacher-child interactions in pre-kindergarten classrooms and children's language and literacy development. One hundred thirty-four pre-k teachers from 25 districts were

randomly assigned to one of two study conditions. MyTeachingPartner (MTP; Pianta, Mashburn, Downer, Hamre, and Justice, 2008) was the web-based professional development program used for the two-year study. Both groups of teachers received access to the MTP Language & Literacy activities and MTP Video Library. The MTP Language & Literacy activities targeted phonological awareness, alphabet knowledge, print awareness, vocabulary, linguistic concepts, narrative, and social communication/pragmatics. On average, teachers used the MTP activities for 1.5 hours per week. The MTP Video Library provided examples of high-quality teacher-child interactions focusing on positive climate, teacher sensitivity, regard for students' perspectives, behavior management, productivity, instructional learning formats, concept development, quality of feedback, language modeling, and literacy focus. The average amount of time teachers spent on the website was 15 hours and 31 minutes. The difference with one group of 65 teachers in the study was the addition of a teacher consultation component. The MTP Consultancy technique provided continuous, practice-focused support and guidance to teachers in an effort to improve their daily interactions with children. An average of 19.5 hours was spent on the consultancy process. The number of children who participated in the study was 1,165. Children's language and literacy skills were assessed using subtests from the Phonological Awareness and Literacy Screening – PreKindergarten (PALS-PreK) and the Preschool Comprehensive Test of Phonological and Print Processing (Pre-CTOPPP). The PALS-PreK measured phonological awareness, print knowledge, and emergent writing. The Pre-CTOPPP assessed blending sounds, elision, print awareness, and receptive vocabulary. Results of the study found that the group of teachers who were randomly

assigned to participate in the MTP Consultancy had greater improvements in the quality of their interactions with preschool children and had preschool children who experienced greater rates of receptive vocabulary development. The study also found that more hours teachers spent implementing the MTP Language & Literacy activities were positively related to children's gains in language and early literacy skills.

Wasik, Bond, and Hindman (2006) conducted a study to examine whether teachers trained in book reading and oral language strategies impacted children's expressive and receptive language skills. Ten teachers and 139 children from two Head Start centers participated in the intervention group, while six teachers and 68 children were in the control group. Teachers in the intervention group were trained in book reading and oral language strategies. Three components of the book reading module included asking questions, building vocabulary, and making connections. Three components of the oral language development module included practicing and promoting active listening, modeling rich language, and providing feedback. Teachers were provided with 22 prop boxes with books, objects, and lesson plans to conduct the intervention for nine months. Teachers were instructed to introduce and label props which included discussing what it could be used for and how it was presented in the book. The teacher then read a trade book twice. Teachers talked about target vocabulary during extension activities. Children were pre-tested and post-tested using the Peabody Picture Vocabulary Test–Third Edition (PPVT-III), Expressive One-Word Picture Vocabulary Test–Third Edition (EOWPVT-III), and a measure of alphabet knowledge. Teachers were observed during book reading and running records were conducted of teacher's talking and questioning strategies. Data were coded into four categories: (a)

informational questions (open, closed), (b) informational talk, (c) managerial questions (open/closed), and (d) managerial talk. Observation results of teachers in the intervention group found more teacher talk during book reading with more open-ended questions. Seven of the ten teachers tripled the amount of verbal exchanges with children. When measuring children's expressive language, the intervention group had significantly larger vocabularies with a moderately strong effect size d = 0.44. When measuring children's receptive language, the intervention group had significantly larger vocabularies with an effect size = 0.73. Overall, positive results were obtained after teachers received training and adequate time to implement language and early literacy skill-building activities.

Green, Peterson, and Lewis (2006) conducted a study to determine the extent that early childhood educators engaged children in literacy-building activities. Regional training sessions were conducted for 180 early childhood educators between April and July of 2004 in a large southern state. Of the participants, 93.9% were female, 66.7% Hispanic, 16.7% obtained an associate's degree, with an average length of time working in the profession to be 6.7 years. Results from a 23-item survey administered prior to training sessions found that efforts were being made in a number of areas to engage children in a variety of important language and literacy activities, but those efforts were not frequent. The top five results from the survey's 23 items represented skill-and-drill related activities. They were as follows: 93.3% practiced saying the alphabet with children, 90% taught children to recognize letters of the alphabet (only 69.4% distinguished between uppercase and lowercase letters), 88.9% practiced counting with children, 88.3% helped children identify different colors, shapes, and sizes, and 87.2% helped children recognize numbers. The bottom five results from the survey's 23 items

focused on concepts about print. They were as follows: 50.0% reading aloud to children individually, 58.3% teaching children features of a book, 63.3% teaching children that printed letters and words run from left to right and from top to bottom, 63.9% encouraging children to make up new verses of familiar songs or rhymes by changing beginning sounds or words, and 68.9% talking about books read together. Having an availability of print materials was the strongest predictor of educators' willingness to engage children in literacy activities. Educators' confidence with the level of training they received also contributed to efforts to promote certain literacy-based activities. The number of children cared for in a particular program was also a factor influencing how often educators promoted language and literacy activities. The study found more educators promoting activities when a larger number of children were being cared for. The average number of children cared for in the study was 14.7. It is unknown whether teachers had assistance in their classrooms. This finding supports the general feeling of educators that smaller class sizes are better. Having fewer children in a class provides opportunities for more individualized support and increases the likelihood of children participating during instruction.

Ball and Gettinger (2009) conducted a study to examine the benefits of providing feedback to kindergarten teachers about students' performance on an early literacy progress monitoring tool. Following a Recognition and Response model (R&R; Coleman, Buysse, & Neitzel, 2006), this study focused on whether teachers used data to change classroom instruction to help students make progress with early literacy skills or to alter the quality of their classroom literacy environments. Participants included eight kindergarten teachers and 103 students in both public and private schools located in rural

or suburban communities in the Midwest. Teachers were non-systematically assigned to either a Feedback or No Feedback condition. Fifty-five students were part of the Feedback condition. Students were administered the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) in the fall, winter, and spring. The DIBELS are individually-administered probes used for evaluating children's growth in early literacy. Measures included Letter Naming Fluency (LNF), Initial Sound Fluency (ISF), Phoneme Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF). Teacher input regarding the utility of the DIBELS progress monitoring data were gathered using an informal survey. The classroom environment was evaluated using the Early Language and Literacy Classroom Observation (ELLCO) in fall and spring. The ELLCO is an observation tool for assessing the quality of preschool and kindergarten literacy environments. An overall ELLCO rating score was obtained from a Literacy Environment Checklist, a 40-minute classroom observation with a follow-up teacher interview, and a Literacy Activities Rating Scale (LARS). Results of the study found that providing teachers with specific feedback about students' performance on the DIBELS led to those students making greater improvements on two DIBELS subtests, LNF and PSF. Specific feedback on student performance had a limited influence on teacher's instructional practices and classroom environments. Teachers need training on how to use the information to adapt instruction to individual needs, in addition to having the necessary resources. Given these supports, teachers can make efforts during shared book reading, small-group activities, and sociodramatic play periods to purposefully interact with students to build their early literacy skills.

Research on the knowledge of early childhood educators in promoting language and early literacy development suggested the necessity of a solid understanding of early literacy skills foundational for children to be good readers, writers, and communicators and the knowledge of a variety of developmentally appropriate strategies and activities that provide opportunities for learning. Crim et al.'s (2008) study has shown that preschool teachers had difficulty identifying specific elements of phonological awareness, which can directly affect what information is taught to preschool children. Ball and Gettinger (2009) found that when teachers felt confident with their level of training and were equipped with adequate print materials, literacy-building activities were strengthened. Given specific training in book reading and oral language strategies, preschool teachers have significantly increased children's expressive and receptive vocabulary (Wasik et al., 2006). Using conversational strategies to promote multiple opportunities to speak, actively listen, and use varying vocabulary along with specific book reading strategies of asking questions, building vocabulary, and making connections depicted the value of social interactions with adults to facilitate learning. With Mashburn et al.'s (2010) study, teachers who were provided continuous support and guidance after targeted training with language and early literacy activities resulted in improved daily interactions with children. The more time and interest teachers gave with purposeful interactions was shown to affect children's language and early literacy skill development. Therefore, within a quality preschool environment children would benefit from continuous interactions with adults educated in the area of early literacy. While training for early childhood educators is beneficial, measuring the quality of preschool environments is necessary to ensure teachers implement what they are taught. Having the

knowledge and abilities to teach early literacy is important, but what teachers do with that knowledge and how those skills are transferred to young children's development is more important. Teachers should receive some type of verification that the strategies and activities being implemented produce positive outcomes. However, Ball and Gettinger's (2009) study reported that feedback on students' test performance was found to only have a limited to moderate influence on teachers' literacy instruction or classroom environment. The need for continued professional development exists to maintain current with strategies and developmentally appropriate activities to develop children's early literacy skills. Vygotsky maintained that learning is a cooperative process that results from quality interactions and experiences, which supports the knowledge of early childhood educators in promoting language and early literacy development.

Strategies and Activities That Promote Early Literacy Development

Preschool teachers have a variety of training and background knowledge of early literacy skills. Similarly, there is a wide range of instructional practices, approaches, and methods of teaching early literacy skills to young children (Strickland et al., 2004). Promoting early literacy in preschools as an important readiness factor will prepare children for the language-mediated instruction and learning that becomes prominent once formal school begins (Phillips, Gorton, Pinciotti, & Sachdev, 2010). Early literacy is often developed through play. Vygotsky noted play as an important activity required to develop self-regulation and other higher metal processes. The ability to self-regulate coincides with children's development of early literacy. Self-regulation involves the use of language to explore and problem solve, plan one's actions, follow the rules, take responsibility, and engage in intentional learning (Whitebread et al., 2009). The

following studies examined research on various strategies and activities that were found to promote early literacy development.

Roskos and Burstein (2011) examined whether a vocabulary instruction technique produced gains in preschoolers' receptive and expressive vocabulary. Twelve full-day preschool classrooms located in a large urban public school setting in the Great Lakes region participated in the study. The intervention control group consisted of 36 children, while 38 children were in the nonintervention control group. All children received daily instruction using an early literacy curriculum with three primary resources: Harcourt – PreK Trophies, a daily read-aloud program of 3-5 books aligned with PreK Trophies units, and guided play activity in theme-based dramatic play. A supplemental, small-group vocabulary instruction technique called say-tell-do was conducted with the intervention control group during center time for 15-18 minute sessions twice a week for three months. Say-tell-do involved saying a target word and telling what the word meant while using a gesture before reading a story, and doing a play activity that prompted the use of the target word following the story. Pre- and post-intervention effects were measured using the Peabody Picture Vocabulary Test (PPVT-III) and a Curriculum Based Assessment (CBA) of 50 words used to conduct weekly progress monitoring of children's word learning. Results of the study found significant gains in receptive vocabulary from the PPVT-III and substantive gains in receptive and expressive vocabulary after examining CBA results. The role of teachers purposely incorporating targeted instruction on vocabulary development was found to benefit children's early literacy skills.

Elliot and Olliff (2008) conducted a study focusing on the advancement of preschool children's early literacy and letter recognition skills. Utilizing the Early Literacy and Learning Module (ELLM; Fountain & Wood, 2003), a research-based curriculum designed to improve the language and pre-literacy skills of children age 3-5, teachers provided daily oral language instruction to 20 children age 2-4. Data were collected from eight children, since the 2-year-old children were not formally assessed. Due to the children's ages, the ELLM curriculum was adapted to include developmentally appropriate literacy activities. Children age 3 and older were pre- and post-tested in September and March using the Alphabet Letter Recognition Inventory (ALRI). Anecdotal information was collected on all of the children. Results of the study found that most children who participated in the daily adapted ELLM activities demonstrated an increase in letter recognition. The mean gain in uppercase letter recognition was 4.75. The mean gain in lowercase letter recognition was much greater at 11.13. The overall mean gain in letter recognition of uppercase and lowercase was 17. Children who did not demonstrate gains in letter recognition did, however, exhibit a heightened awareness of print. Mindfully adapting activities to preschool children's early literacy needs was found to benefit the development of pre-readers. Knowing each child's knowledge and abilities enables teachers to facilitate learning and move early literacy development forward at each child's pace.

Woodard, Haskins, Schaefer, and Smolen (2004) conducted an action research project to determine the extent of growth involving pre-k and kindergarten children's oral language development. Research was conducted in 24 Buffalo, New York public schools. Forty-four teachers participated, in addition to 95 kindergarten children and 81

pre-kindergarten children. Participants scored 80 or below on the Brigance Comprehensive Inventory of Basic Skills screening tool. A Let's Talk project was implemented that paired less fluent speakers with fluent speakers while incorporating the use of dramatic play toys in five categories. Teachers attended half a day training before implementing Let's Talk for 15 minute periods over ten weeks. During Let's Talk, teachers introduced and explained new vocabulary while modeling ways to use toys. Students learned how to be good speakers and listeners through classroom discussion, modeling, and practice. A pre-test and post-test were internally designed to reflect the goals of the project. Results showed statistically significant improvements for both pre-k and kindergarten children's oral language development. Teachers reported growth in children's vocabulary sentence length and structure, sense of story, and sharing of ideas through writing and drawing. Information from a survey reflecting New York State Standards addressing information, comprehension, vocabulary, main idea, and gesture factors found 92% of pre-k and 95% of kindergarten participants demonstrating positive gains across all factors.

Research on strategies and activities that promoted early literacy development found instruction targeted on vocabulary development to benefit both children's receptive and expressive vocabulary skills. Adults modeled the use of language throughout the day given various learning opportunities. When curriculum was used to provide daily oral language instruction through a variety of literacy activities, children gained letter recognition skills in addition to a heightened awareness of print. Results from a special project promoting oral language development through peer interactions and dramatic play toys found growth in both children's vocabulary and comprehension. A trend seen in

studies involving preschool environments was the prime opportunity to build vocabulary during guided play activities. Teachers interacted with children often to enhance communication efforts. Children explored with objects and problem solved given various situations with peers. Reading aloud to children was an additional activity occurring in preschools that supported children's early literacy development. Any given early literacy activity presented to preschool children needs to be developmentally appropriate and reflect a variety of approaches to learning. While various approaches to teaching early literacy skills have demonstrated positive results, there exists the question whether results are sustained to affect later literacy achievement. Later literacy achievement should be evident based on the amount of time spent developing children's early literacy skills and the type of early literacy activities implemented with children.

Effects of Early Literacy Development on Later Literacy Achievement

The development of early literacy skills is critical during the preschool years as children gain the pre-reading skills needed to be successful in school. Pre-readers should have knowledge of the alphabet, phonological awareness, letter-sound correspondences, awareness of print concepts, and some experience using writing as a form of communication (Elliott & Olliff, 2008). When efforts are made to build a solid foundation, children are better prepared for a successful transition to school and later literacy achievement. The following studies examined specific early literacy skills, experiences and instructional practices implemented by both parents and teachers that were linked to later literacy achievement. One included a longitudinal study conducted to understand the similarities and differences of kindergarten children's cognitive skills and knowledge based on various factors.

The National Institute for Literacy [NIL] (2008) published a report of the National Early Literacy Panel (NELP) summarizing relationships between children's early abilities and skills and later literacy development. A meta-analysis was conducted with about 500 research articles. The NELP first set out to identify specific early literacy skills that could affect later literacy achievement. A total of six variables representing early literacy skills had medium to large predictive relationships with later measures of literacy development. Those variables included alphabet knowledge, phonological awareness, rapid automatic naming of letters, digits, objects, or colors, writing or writing name, and phonological memory. Five additional early literacy skills were found to moderately correlate with at least one measure of later literacy achievement. Those important variables included concepts about print, print knowledge, reading readiness, oral language, and visual processing. Information was then gathered by NELP specific to programs, interventions, and other instructional approaches linked to later outcomes in reading, writing, or spelling. Environments and settings, in addition to child characteristics, were also considered as contributing factors to children's early literacy skills and abilities. Instructional practices that NELP identified to enhance early literacy skills included code-focused interventions (such as phonological awareness and alphabet knowledge instruction), shared-reading interventions, parent and home programs, preschool and kindergarten programs (such as the Abecedarian Project), and language-enhancement interventions. Code-focused interventions consistently demonstrated positive effects directly on children's conventional literacy skills. The majority of code-focused interventions were found to involve some form of phonological awareness training. Shared-reading interventions were found to have moderate effects on measures

of oral language and print knowledge. Home and parent programs yielded statistically significant and moderate to large effects on children's oral language skills and general cognitive abilities. Studies of preschool and kindergarten programs produced significant and moderate to large effects on spelling and reading readiness. The largest impact of the preschool and kindergarten programs was on the composite measure of readiness, indicating that they were highly effective in preparing children for school entry. Finally, language-enhancement interventions were successful at increasing children's oral language skills to a large and statistically significant degree. With regards to the influence of child characteristics, NELP determined that age, socioeconomic status, and race did not alter the effectiveness of the various instructional interventions. Interventions used throughout the studies were provided by parents and/or teachers, individually or in small groups. The interventions that produced large and positive effects on children's code-related skills and conventional literacy skills were usually teacher-directed. Overall, studies examined by NELP confirmed that different approaches to early literacy instruction influenced the development of essential literacy skills. With few studies involving preschool programs, more studies are recommended to better understand the types of early literacy skills affected.

A longitudinal study was conducted by Dickinson and Tabors (2002) to determine how parents and teachers supported the development of language skills in young children; specifically the kinds of experiences and interactions that contributed to children's later literacy success. A Home School Study of Language and Literacy Development began in eastern Massachusetts in 1987 with 74 preschool children 3 years of age from families eligible for Head Start. The study followed children through

seventh grade gathering information from home and school visits, audio-taped conversations, interviews with mothers and teachers about their experiences with children, and the administration of the School-Home Early Language and Literacy – Kindergarten (SHELL-K) to measure a variety of components: narrative production, picture description, definitions, superordinates, story comprehension, emergent literacy (letter recognition, writing concepts, story and print concepts), and receptive vocabulary. Findings indicated three dimensions of children's experiences during preschool and kindergarten years that were related to later literacy success: (a) exposure to varied vocabulary, (b) opportunities to be part of conversations that used extended discourse, and (c) home and classroom environments that were cognitively and linguistically stimulating. Children performed better in kindergarten when their preschool teachers limited their own talking and extended children's own conversations with rare and varied words related to the theme of play. Results also indicated a link between the number of words and variety of words that children used during play to early literacy performance measures in kindergarten. Kindergarten scores on receptive vocabulary, narrative production, and early literacy were highly predictive of their scores on reading comprehension and receptive vocabulary in 4^{th} and 7^{th} grades.

West, Denton, and Germino Hausken (2000) summarized findings from an Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K). A nationally representative sample of about 22,000 kindergarteners was followed beginning the fall of 1998 to assess the children's cognitive skills and knowledge, social skills, physical health and well-being, approaches to learning, and their family environment. Baseline data were collected about the children, their families, and kindergarten program through

telephone interviews and questionnaires. An individual assessment was conducted with each child. Several findings were reported as a result of the study. Older kindergarten students outperformed younger kindergarteners in reading, math, and general knowledge. Specific reading skills included recognizing letters and understanding beginning and ending sounds. Specific math skills included recognizing numbers, shapes, counting to 10, sequencing patterns, using nonstandard units of length to compare objects, and understanding ordinal sequence. Children's performance was found to increase with the level of their mothers' education. The majority of parents had more than 25 children's books in the home. Kindergarteners from 2-parent families were more likely to score in the highest quartile. Kindergarteners' general health differed by family type, level of mothers' education, and whether or not family used public assistance. Black children were more likely to receive before and after school care. Children for the most part exhibited a high incidence of pro-social behaviors and a low incidence of problem behaviors. Reports of children's problem behaviors varied by race/ethnicity and by whether the teacher or parent was rating the child. With regards to how children approached learning, girls persisted at tasks more often than boys. Older kindergarteners persisted more than younger kindergarteners. Children not at risk for school difficulty persisted more often than children at risk. While first-time kindergarteners participating in the study were found to be similar in many ways, differences also existed in children's cognitive skills and knowledge in relation to their characteristics, family background, and early care and educational experiences. To help control for these variations, quality preschool experiences grounded in theory by Vygotsky's belief about the importance of

positive social interactions can provide consistent quality care and cognitive growth, leaving fewer children at risk for later difficulties in school.

Research on the development of early literacy and its effects on later literacy achievement found different approaches to early literacy instruction that influenced the development of essential literacy skills with young children. Supporting prior studies on strategies and activities that developed early literacy skills, teachers play an important role during shared reading and other opportunities to enhance children's language. Children need a stimulating environment where imaginative play, interactive book reading, and other opportunities to communicate and build literacy concepts are available. Children require an appropriate early literacy foundation to build not only cognition, but social and emotional skills as well. Various child and family characteristics (family structure, mother's educational attainment, socioeconomic status, race) have contributed to children's cognitive abilities and achievement. When considering all these factors as children enter preschool, the need exists for quality experiences that will provide language-rich experiences. Quality preschool environments stimulate the use of language through targeted instructional and experiential play. With plenty of opportunities to have conversations and build vocabulary as part of their early learning experiences, children's cognitive growth can be affected. Children who demonstrate early literacy achievement during kindergarten have been predictive of later reading achievement.

Summary on Early Literacy Development

A review of literature on early literacy development reinforced that children benefit from an environment rich with strategies and activities that develop language and

early literacy skills. Preschools continue to promote early literacy as an important readiness factor in preparation of the language-mediated instruction and learning that becomes prominent once children enter formal schooling (Phillips et al., 2010). Early literacy development is possible within preschool environments when educators are equipped with the knowledge of pre-reading skills and have the ability to provide quality experiences and instructional practices that affect children's early literacy achievement. After initial training, continued support and guidance through professional development opportunities is helpful to ensure the most effective approaches to early literacy skill building are being utilized.

Studies found positive results with children's early literacy development being associated with both physical and social elements of process quality. Physical elements included environmental print, books, toys, writing tools, and other print materials promoting letter recognition. Studies mainly focused on social elements, which included the type of language and literacy activities implemented and how teachers interacted with children, including approaches to teaching early literacy skills. Reading aloud to children developed children's language and vocabulary through content exposure and conversations related to the literature. Children also gained an awareness of print and basic phonological awareness skills.

Although academic focused literacy-building activities were implemented in preschool environments, play continued to be the most important developmentally appropriate activity that routinely promoted early literacy development. Play opens the possibilities for children to explore independently, talk and negotiate, problem solve, learn from their peers, and have interactions with adults as they facilitate learning. Given

opportunities to explore with language and concept development, children were more apt to develop higher mental processes. Opportunities for interactions and communication were high during play resulting in enriched receptive and expressive language and a stronger vocabulary. Quality environments that stimulated the use of language through targeted instruction and play had the potential of developing children's early literacy skills.

As with Levy's (1986) study, having time with quality materials and interactions with a caring adult to facilitate learning, children's development flourished. With Roskos and Burstein's (2011) study, the benefit of teachers talking with children, whether through structured or exploration activities, laid a solid foundation for early literacy development. With continued efforts, children's early literacy achievement can lead to later reading achievement.

Chapter Summary

A review of the literature provided extensive knowledge about the importance of quality early learning experiences and its affect on children's later literacy achievement. Vygotsky's social cultural theory was evident throughout the studies. Children's development is a shared process of learning that relies upon social supports.

Studies have documented both variations in the process quality of preschool environments and associations with children's school readiness skills supporting early literacy. Quality preschool environments need to offer developmentally appropriate materials, opportunities, activities, and interactions among others to produce noteworthy gains with children's readiness skills.

Later literacy achievement is dependent upon the literacy foundation that children experience prior to kindergarten. Vygotsky's theoretical concepts of mediation and higher mental processes have been known to benefit children's development of early literacy skills. According to Vygotsky, adults play a significant role in a child's development by advancing learning beyond their current knowledge and abilities.

Research on quality preschool experiences are grounded in Vygotsky's theory by challenging, supporting, and stimulating children's growth and development. All children benefit from having quality early learning experiences that develop school readiness. As research continues to emerge on the quality of children's early learning experiences, the need exists to add to the literature by identifying process quality factors of a preschool's language and early literacy environment and the influence these factors have on children's pre-reading and writing performance in the beginning of kindergarten. Continuing to build a strong literacy foundation during the preschool years increases the likelihood of success during the elementary years. Chapter three describes the methodology used to further examine the relationship between quality preschool environments and children's early literacy skills.

CHAPTER THREE

METHODOLOGY

Quality early childhood education continues to be one of the nation's high interest priorities. Preschools are being seen more as a fundamental component of the education system, rather than an optional add-on (Guernsey & Mead, 2010). Knowing what quality preschools are doing to lay the foundation for later academic success is critical. Focusing on developmentally appropriate school readiness skills, specifically in the area of early literacy, is an instrumental part of quality preschool experiences. Early literacy involves teaching the foundational skills necessary to communicate through language, to learn to read, and to write. For this reason, advances in knowledge about the effectiveness of early childhood environments are warranted (Reynolds & Temple, 2005).

The purpose of this correlational study was to determine whether a relationship existed between the quality of a preschool's language and early literacy environment and children's pre-reading and writing performance in the beginning of kindergarten in a rural school district. Five additional variables, entry age to kindergarten, gender, race, socioeconomic status (based on eligibility for the federal free or reduced lunch program), and the educational attainment of preschool staff were included to provide further information about each participant's background and the relative influence of each of the variables. Children's early literacy skills are developed through process quality factors within preschool environments. Elements of process quality within preschool environments that were analyzed fall into two categories: (a) physical elements and (b) social elements. This study will add to the literature focusing on the effects of quality preschool experiences based on developmentally appropriate practices as supported by the theoretical framework of Vygotsky.

The research questions answered by the results of the study included:

1. What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on measures of children's pre-reading performance in the beginning of kindergarten?
2. What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on the measure of children's writing performance in the beginning of kindergarten?
3. What other factors influence children's pre-reading and writing performance in the beginning of kindergarten, i.e., entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff?

The research hypotheses for the study were as follows:

1. A relationship exists between the physical and social elements of process quality in a preschool's language and early literacy environment on measures of children's pre-reading performance in the beginning of kindergarten.
2. A relationship exists between the physical and social elements of process quality in a preschool's language and early literacy environment on the measure of children's writing performance in the beginning of kindergarten.

Contents of this chapter include an overview of the research design, an overview of the population, and an explanation of the selection of participants. A description of each observation and assessment instrument is provided, including reports of validity and reliability. Results of peer debriefing are provided for categorizing elements of process quality for each observation tool. Interrater reliability is reported from field testing the use of the *ELLCO Pre-K* and scoring District Writing Samples utilizing the *Conventions*

of Writing Developmental Scale. Data collection procedures are explained as they related to the school district, Office of Child Development and Early Learning, and participating preschools. A summary of data collected regarding kindergarten participants, assessment instruments, and observation instruments are explained. A description of how the data will be analyzed is provided.

Design

This correlational study can also be identified as a type of descriptive research design utilized for the purpose of gathering quantitative data to describe an existing condition. Qualitative data in the form of observation notes and survey data supplemented the quantitative data to answer the research questions. Data collected helped to determine whether, and to what degree, a relationship existed between two or more quantifiable variables. While a high correlation between variables did not imply that one caused the other, the existence of a high correlation did permit prediction (Gay, Mills, & Airasian, 2009). For the purpose of this study, the primary independent variable was the quality of a preschool's language and early literacy environment, while the dependent variables examined were children's performance on pre-reading and writing assessments in the beginning of kindergarten. Other independent variables that were examined to provide more in depth information included entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff. Descriptive statistics included were the means, standard deviations, and correlation coefficients. A correlational design was the best choice for this study as the data collected determined if a relationship existed between quality preschool experiences and children's literacy readiness in the beginning of kindergarten. Relationships were

determined by comparing elements of process quality in a preschool's language and early literacy environment with measures of children's pre-reading and writing performance in the beginning of kindergarten.

Participant Population

Criteria were set by the researcher for purposely selecting participants from a particular population for the study. Purposive sampling was the process of selecting a sample that was believed to be representative of a given population (Gay et al., 2009). Participants included both eligible preschools and current kindergarten children who attended the participating preschools. Participating preschools had their environments assessed for elements of process quality as it pertained to the development of early literacy. Kindergarten children selected for participation had their beginning of kindergarten assessment data and demographic information analyzed.

Kindergarten Children

Kindergarten children (N = 291) enrolled during the 2014-2015 school year in a rural school district in northeast Pennsylvania served as the chosen population from which participants were purposely selected to be part of this study. The following information describes the school district from which the kindergarten children attended. The district is composed of one grade kindergarten through three elementary school, one grade four through six intermediate school, one grade seven and eight middle school, and one grade nine through twelve high school. According to data obtained from the 2013-2014 school year, the district staff was comprised of 474 professional staff and 370 support professional staff. The school district serviced approximately 4,949 students during the 2014-2015 school year. Students from minority groups constituted 21.87% of

the district's population. Approximately forty percent of the district's total population qualified for free or reduced lunch. This district was chosen because of its strong interest and partnership with local preschools in preparing children with developmentally appropriate readiness skills to be successful in school. The district had a history of about half of its kindergarten enrollment having experience from preschools participating in Keystone STARS, which increased the sample size for this study.

Preschools

There were currently 54 preschools located within the residential area of the chosen school district. Focusing on preschools in the district's area provided relevant feedback on how quality early learning environments were preparing children for literacy readiness evident in the beginning of kindergarten. Preschools from the identified area that were selected for participation had to meet three criteria. The qualifying criteria was as follows: 1) Had a minimum of three children who attended kindergarten in the chosen school district of study, 2) Had a completed evaluation by Pennsylvania's Office of Child Development and Early Learning utilizing the *Early Childhood Environment Rating Scale – Revised (ECERS-R)* as part of Keystone STARS, and 3) Utilized a research-based, developmentally appropriate curriculum. Setting the criteria at a minimum of three children per preschool increased the possibility of obtaining a large number of participants from multiple preschools. Having *ECERS-R* results provided a valuable piece of information regarding elements of process quality in preschools (PA OCDEL, 2010). Preschools that used an established curriculum were preferred, because an established curriculum is often based on research that supports developmentally appropriate practices for young children.

Selection of Participants

Whether or not kindergarten children attended preschool prior to kindergarten entry was obtained from the district's Kindergarten Registration Screening Forms. Preschool experience was noted for 186 kindergarten children (64% of the population), while 54 kindergarten children had no preschool experience (19% of the population). It was unknown whether 51 kindergarten children attended preschool prior to kindergarten entry. From the 186 kindergarten children with preschool experience, there were 38 different preschools listed on children's Kindergarten Registration Screening Forms. A summary of the population's preschool experience is presented in Table 1.

Table 1

Population's Preschool Experience

Total kindergarten population	291
Preschool experience	186
Total # of preschools	38
Keystone STARS	11
Other	27
No preschool experience	54
Unknown	51

Preschools selected for participation in this study met three criteria: 1) Had a minimum of three children who attended kindergarten in the chosen school district of study, 2) Had a completed evaluation by Pennsylvania's Office of Child Development and Early Learning utilizing the *ECERS-R* as part of Keystone STARS, and 3) Utilized a

research-based, developmentally appropriate curriculum. Thirteen preschools had a minimum of three children (N = 153) who attended kindergarten in the chosen school district of study. Six preschools participated in Keystone STARS, but only four preschools had a completed evaluation by Pennsylvania's Office of Child Development and Early Learning utilizing the *ECERS-R.* All four preschools were rated STAR 4. Each of the four preschools utilized a research-based, developmentally appropriate curriculum. As a result, four preschools met all three criteria for participation. A total of 97 kindergarten children (33% of the population) attended the four qualifying preschools and were the focus for participation in this study (see Figure 2).

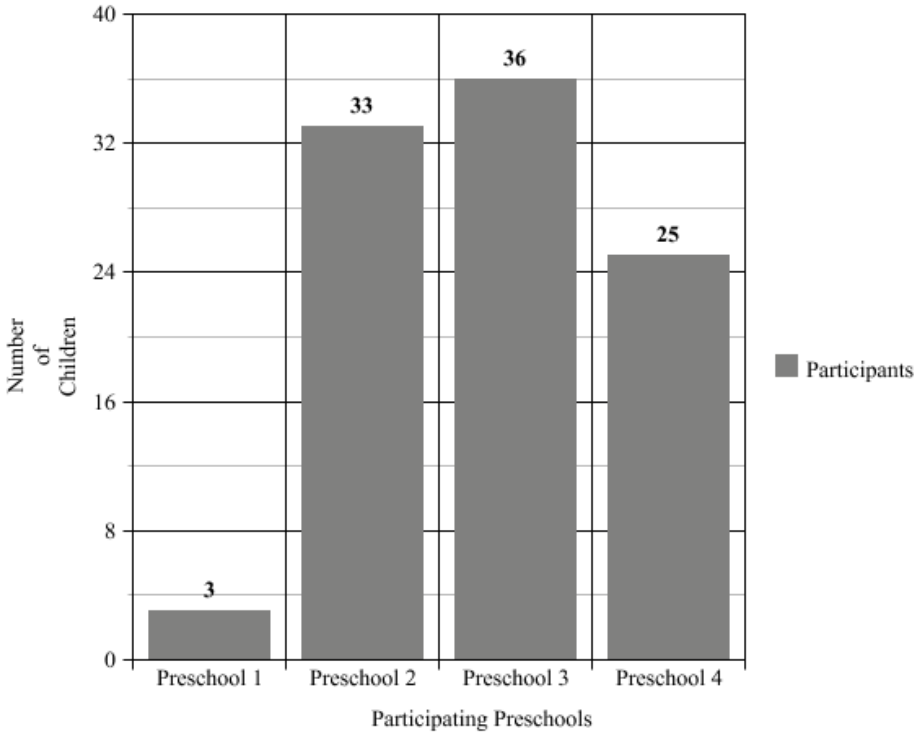

Figure 2. Number of children per participating preschool.

Assessment data from the sample of kindergarten children was then analyzed to determine the influences a quality language and early literacy preschool environment had on pre-reading and writing performance outcomes. A quality language and early literacy

environment was defined by ratings obtained from specific observation instruments described below.

Observation Instruments

To provide evidence of what quality looks like in preschools, two observation instruments were utilized. The observation instruments selected for this study included: the *Early Childhood Environment Rating Scale – Revised Edition (ECERS-R)* and the *Early Language and Literacy Classroom Observation (ELLCO) Pre-K*. These instruments provided information about elements of quality within a preschool's language and early literacy environment.

While structural quality is one aspect that contributes to the overall quality of preschool environments, this study focused on the aspect of *process quality*. Process quality consists of both *physical* and *social elements* that directly benefit children and addresses the social-cultural context to mediate learning and advance development. Children's early literacy skills are developed with both physical and social elements of process quality in preschool environments. *Physical elements* of process quality include the availability of materials and learning opportunities to enhance children's learning, while *social elements* of process quality involve daily social interactions and developmentally appropriate strategies and activities which engage children.

Early Childhood Environment Rating Scale – Revised Edition (ECERS-R)

The *Early Childhood Environment Rating Scale – Revised Edition (ECERS-R)* was one of two observation instruments utilized to identify elements of process quality within a preschool's language and early literacy environment. The *ECERS-R* is an example observation-based measure utilized to quantify the quality of the curriculum,

environment, teacher-child interactions, and teaching practices with children two and a half through five years of age within early childhood settings. The *ECERS-R* was written by Harms, Clifford, and Cryer and published in 1998 by Teachers College Press. The *ECERS-R* is a revision of the well-known and established original scale, the *Early Childhood Environment Rating Scale (ECERS)*, which was written by Harms and Clifford and published in 1980 by Teachers College Press. The development of the original *ECERS* involved seven nationally recognized experts in the day care and early childhood fields who were asked to rate each item on the scale in terms of its importance to early childhood programs (Harms & Clifford, 1980). The *ECERS* was revised in order to update the content within the levels of program quality to include current definitions of best practices and research relating practices to child outcomes. Contributing to the development of the *ECERS-R* is the definition of program quality embodied in NAEYC's 1997 revision of *Developmentally Appropriate Practice*, which placed a greater emphasis on cultural diversity, family concerns, and individual children's needs (Harms, Clifford, & Cryer, 1998). The instrument is intended to be used by individuals in various roles related to early childhood settings, such as teachers, directors, and outside professionals. Participation in training is preferred before using the *ECERS-R* formally. Administration of the *ECERS-R* requires a continuous observation of 2-3 hours. Additional information from schedules and teachers' responses to questions may also be necessary if the indicators are not observed (Harms et al., 1998).

Validity. The following information describes the validity of the *ECERS-R* instrument. Validity is defined as the degree to which an instrument measures what it is supposed to measure (Gay et al., 2009). In the development of the *ECERS*, Harms and

Clifford (1980) reported high content validity with 78% agreement of importance among experts, while only 1% indicated low importance. The scale's validity was also tested by comparing ratings of expert observers with trainers' ratings in 18 classrooms resulting in a rank order correlation of .737. When scaled scores of the observers were compared to the trainers' ratings in the 18 classrooms, a correlation of .697 resulted (Harms & Clifford, 1980). The *ECERS-R* is expected to maintain that same form of validity, since it maintains the same conceptual framework as well as the same basic scoring approach and administration (Harms et al., 1998).

Reliability. The *ECERS-R* had the following reliability results, which reported on the degree to which the tool consistently measured what it was intended to measure (Gay et al., 2009). A test focusing on interrater reliability was conducted in a sample of 21 classrooms. The percentage of agreement across the full 470 indicators in the scale was 86.1%, with no item having an indicator agreement level below 70%. The proportion of agreement at the item level was 48% for exact agreement, and 71% for agreement within one point. Subscale internal consistency scores ranged from .71 to .88 for the seven subscales and a total scale internal consistency of .92. Results indicated acceptable levels of interrater agreement at the three levels of scoring – (a) indicators, (b) items, and (c) total score (Harms et al., 1998).

Indicators related to language and early literacy. The *ECERS-R* consists of 43 indicators associated with 7 subscales: Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interaction, Program Structure, and Parents and Staff. Each indicator has detailed descriptions and can be rated from 1-7, with 1 (*inadequate*), 3 (*minimal*), 5 (*good*), and 7 (*excellent*) (Harms et al., 1998). A rating score of 5 or higher

was identified by Harms et al. (1998) as defining *good* to *excellent* quality and was used by the researcher to identify elements of process quality within a language and early literacy environment. For the purpose of this study, 37 indicators related to language and early literacy were examined. With this study focusing on process quality as it related to language and early literacy, the researcher identified 22 indicators that represented physical elements of process quality and 15 indicators that represented social elements of process quality. Physical elements were defined as materials and opportunities, while social elements were defined as interactions and activities. The researcher chose to categorize indicators as physical and social elements based on prior research findings identifying the importance of transmitting benefits directly to children through these elements of process quality (Mashburn, 2008). The following *ECERS-R* indicators with their corresponding subscales were identified by the researcher as contributing to the process quality of a preschool's environment (see Table 2).

Table 2

ECERS-R Indicators of Process Quality Related to Language and Early Literacy

Subscales	Physical elements (/22)	Social elements (/15)
Space and Furnishings	2, 4, 5, 6, 7, 8	
Personal Care Routines	11	9, 10, 12, 13, 14
Language-Reasoning	15	16, 17, 18
Activities	19, 20, 21, 22, 23, 24, 25, 26, 27, 28	
Interaction		29, 30, 31, 32, 33
Program Structure	34, 35, 36	37
Parents and Staff	43	41

Peer debriefing on the validity of indicators selected as physical and social elements. To assess the validity of the indicators selected as physical and social elements of process quality, peer debriefing occurred with two professionals knowledgeable about early literacy development. Each peer reviewer was provided a brief description of physical and social elements of process quality as it related to the development of language and early literacy. Peer reviewers then examined and categorized each of the 37 *ECERS-R* indicators chosen by the researcher for the purpose of this study. The number of physical and social elements identified as relating to language and early literacy development by the researcher and each peer reviewer is summarized in Table 3.

Table 3

ECERS-R Indicators Categorized as Elements of Process Quality

	Physical elements	Social elements
Researcher	22	15
Reviewer #1	24	13
Reviewer #2	17	20

Table 4 lists in detail for each category of physical and social elements related to the development of language and early literacy the number of indicators agreed upon by the researcher with each peer reviewer.

Table 4

Agreement of ECERS-R Elements of Process Quality

# Inspected	# Matched Physical elements	Percent agreement	95% CI
	Researcher, Reviewer 1		
22	21	95.45	[77.16, 99.89]
	Researcher, Reviewer 2		
22	13	59.09	[36.35, 79.29]
	# Matched Social elements		
	Researcher, Reviewer 1		
15	12	80.00	[51.91, 95.67]
	Researcher, Reviewer 2		
15	11	73.33	[44.90, 92.21]

Note. CI = confidence interval.

Results of data summarized in Table 4 show that Reviewer 1 was closely aligned to the researcher's chosen categories by disagreeing with only four *ECERS-R* indicators out of 37. There was a 95.45% agreement with physical elements of process quality and an 80.00% agreement with social elements of process quality. Disagreement occurred with indicators related to personal care routines and opportunities for professional growth for parents and staff. Personal care routines involved toileting, health, and safety

practices. The researcher categorized these indicators as social elements of process quality because of specific staff-child interactions, which included teaching children through books, pictures, and games how to manage health practices and the importance of staff explaining reasons for safety rules to children.

Results of data summarized in Table 4 show that Reviewer 2 was not as closely aligned to the researcher's chosen categories. Reviewer 2 categorized a total of 13 indicators opposite the researcher. There was a 59.09% agreement with physical elements of process quality and a 73.33% agreement with social elements of process quality. Disagreement occurred with indicators related to personal care routines, activities, and program structure. Reviewer 2 provided feedback about having difficulty discerning whether an indicator was an opportunity (physical element) or an activity (social element). Reviewer 2 also felt that some indicators could be categorized as either a physical or social element, which made it difficult to decide.

When assigning indicators as either physical or social elements of process quality, the researcher agreed with the feedback provided by Reviewer 2. The description of some indicators included both physical and social elements of process quality. After closely examining each descriptor provided for an indicator, the researcher often assigned a category based on a majority decision. For example, there were six indicators related to activities on the *ECERS-R*, such as art, music, sand, and dramatic play, in which Reviewer 2 disagreed with the researcher by categorizing them as social elements. Even with the *ECERS-R* including these indicators as part of the subscale titled Activities made an assumption that they were social elements. However, when reading the various descriptors for an indicator, i.e., dramatic play, *ECERS-R* placed an emphasis on

materials (having a variety of themes, having many materials accessible, rotating materials, providing props that represent diversity, and providing props outdoors). Only one descriptor supported categorizing the dramatic play indicator as a social element (using pictures, stories, and trips to enrich dramatic play). Therefore, based on a majority of the descriptors focusing on materials, the researcher assigned the indicator as a physical element of process quality. Categorizing physical and social elements of process quality for the *ECERS-R* was necessary to further examine each indicator's quality rating.

Interrater reliability. Interrater reliability results of identifying physical and social elements of process quality as determined by the researcher and two peer reviewers when combined are summarized in Table 5. Only 62.16% agreement was found between the researcher and two peer reviewers when categorizing all physical and social elements of process quality for the *ECERS-S*.

Table 5

ECERS-R Attribute Agreement Analysis for Categorizing Between Appraisers

# Inspected	# Matched	Percent agreement	95% CI
37	23	62.16	[44.76, 77.54]

Note. # Matched = All appraisers' attributes agree with each other.

In an effort to further examine the degree of agreement for three raters categorizing physical and social elements of process quality, Fleiss' Kappa statistics have been calculated and are reported in Table 6. If kappa = 1, then there is perfect agreement. If kappa = 0, then agreement is the same as would be expected by chance. The higher the

value of kappa, the stronger the agreement between appraisers. For the *z*- and *p*-values, the hypothesis being tested is:

H_0: The agreement between appraisers is not due to chance.

H_1: The agreement between appraisers is due to chance.

Table 6

Fleiss' Kappa Statistics for ECERS-R Attribute Agreement

Response	Kappa	*SE* Kappa	*z*	*p* (*vs* > 0)
Physical	0.486111	0.0949158	5.12150	0.0000
Social	0.486111	0.0949158	5.12150	0.0000

Note. Single trial within each appraiser.

A kappa value of 0.486111 is considered moderate agreement between the three raters. A kappa value less than 0.70 indicates a need for improvement with the system in place for categorizing physical and social elements of process quality. A *z*-score of 5.12150 was calculated. Results led the researcher to fail to reject the null hypothesis. Agreement between appraisers was not due to chance.

Significance. The significance of using the *ECERS-R* in this study was attributed to the state's decision to utilize this observation tool for measuring the quality factors of preschools in Keystone STARS. To date, only preschools with a Keystone STAR rating of 2 applying for STAR 3, existing Keystone STARS 3 and 4, in addition to Head Start and preschools licensed through the Department of Welfare have been rated using the *ECERS-R*. All other preschools are not required to have their classroom components

evaluated by OCDEL utilizing the *ECERS-R*. STAR 2 and 1 preschools, however, are asked to self-assess their environments and plan for improvements as necessary.

Limitation. There was a limitation associated with the use of the *ECERS-R* instrument specific to the time in which the preschool environment was observed. Trained personnel employed by the Office of Child Development and Early Learning (OCDEL) had already conducted one observation in each preschool selected to participate in the study. As a result, ratings derived at the time of assessment might not be fully representative of the environment longitudinally (Canute Lambert et al., 2008). To address this limitation, the researcher chose to observe participating preschools using an additional observation instrument to further assess language and early literacy environments.

Early Language & Literacy Classroom Observation (ELLCO) Pre-K

To assist with measuring the development of children's literacy readiness within preschool environments, the following instrument was used. The *Early Language & Literacy Classroom Observation (ELLCO) Pre-K* is an example observation-based measure utilized to provide information on language and early literacy development within preschool classrooms having children ages 3 to 5 years old. The *ELLCO Pre-K* was written by Smith, Brady, and Anastasopoulos and published in 2008 by the Paul H. Brookes Publishing Co., Inc. First published in 2002 as the *ELLCO Toolkit*, Research Edition, the *ELLCO Pre-K* has since been revised to incorporate recent research on language and early literacy development. Elements of the *ELLCO Pre-K* have been informed by indicators of early literacy identified by the National Early Literacy Panel (NIL, 2008). The instrument is intended to be used by individuals having strong

background knowledge of children's language and early literacy development as well as experience teaching in preschool classrooms, such as teachers, supervisors, professional development facilitators, or researchers. Administration of the *ELLCO Pre-K* requires at least three-and-a-half hours of consecutive observation (Smith, Brady, & Anastasopoulos, 2008). Observers are not required to participate in training before using the *ELLCO Pre-K*. Criteria for observers include having familiarity with preschool classrooms, knowledge of language and early literacy, and classroom observation experiences.

Validity. The following information pertains to the content validity of the *ELLCO Pre-K* instrument. Experts in the field of early literacy contributed to both the development and the review of the original *ELLCO Toolkit*. Furthermore, all of the elements of the *ELLCO* were aligned with findings presented in Snow, Burns, and Griffin's (1998) *Preventing Reading Difficulties in Young Children* and the International Reading Association's (1998) publication *Learning to Read and Write: Developmentally Appropriate Practices for Young Children* (Smith, Dickinson, Sangeorge, & Anastasopoulos, 2002). Changes from the *ELLCO Toolkit* to create the *ELLCO Pre-K* addressed the specificity of content items in the classroom observation tool, the detailed descriptive indicators provided, as well as a broader range of measures of quality in early literacy (Smith et al., 2008).

Reliability. The *ELLCO Pre-K* had the following reliability results. Data were collected from 2008 through 2010 as part of a U.S. Department of Education-funded Early Reading First project: Reading to Nurture Excellence in Worcester (RENEW). *ELLCO Pre-K* observations were conducted twice annually in 35 classrooms over the course of three years totaling 203 classroom observations. An average interrater

reliability of 74% was achieved. Internal consistency was rated very good for both the *General Classroom Environment* subscale with a Cronbach alpha of .864 and the *Language and Literacy* subscale having a Cronbach alpha of .922. Cronbach's alphas for the five sections from both subscales were high, ranging from .723 for the *Curriculum* section to .894 for the *Print and Early Writing* section. Item-total correlations for each section were moderate to high, ranging from .487 for Item 7, *Recognizing Diversity in the Classroom* to .861 for Item 17, *Early Writing Environment* (Smith et al., 2008).

Indicators related to language and early literacy. The *ELLCO Pre-K* consists of 19 indicators organized into five main sections: I. Classroom Structure, II. Curriculum, III. The Language Environment, IV. Books and Book Reading, and V. Print and Early Writing. Sections I and II combine to create the General Classroom Environment subscale, while Sections III, IV, and V combine to create the Language and Literacy subscale. Each indicator has detailed descriptions and can be rated from 1-5, with 1 (*deficient*), 2 (*inadequate*), 3 (*basic*), 4 (*strong*), and 5 (*exemplary*) (Smith et al., 2008). Qualitative data in the form of observation notes or sources of evidence were essential to accurately score each indicator. A rating score of 4 or 5 has been identified by Smith et al. (2008) as defining *strong* to *exemplary* quality and was used by the researcher to identify elements of process quality within a preschool's language and early literacy environment.

All 19 of the *ELLCO Pre-K* indicators have been identified by the researcher as contributing to the process quality of a preschool's environment as it related to language and early literacy. To be consistent with how the *ECERS-R* was analyzed, the researcher further categorized the data in terms of physical and social elements (see Table 7).

Physical elements were defined as materials and opportunities, while social elements were defined as interactions and activities. There were 7 indicators that represented physical elements of process quality and 12 indicators that represented social elements of process quality.

Table 7

ELLCO Pre-K Indicators of Process Quality Related to Language and Early Literacy

Subscales	Physical elements (/7)	Social elements (/12)
Classroom Structure	1, 2	3, 4
Curriculum	6	5, 7
The Language Environment		8, 9, 10, 11
Books and Book Reading	12, 13, 14	15, 16
Print and Early Writing	17	18, 19

Peer debriefing on the validity of indicators selected as physical and social elements. To assess the validity of the indicators selected as physical and social elements of process quality, peer debriefing occurred with two professionals knowledgeable about early literacy development. Each peer reviewer was provided a brief description of physical and social elements of process quality as it related to the development of language and early literacy. Peer reviewers then examined and categorized each of the 19 *ELLCO Pre-K* indicators chosen by the researcher for the purpose of this study. The number of physical and social elements identified as relating to language and early literacy development by the researcher and each peer reviewer is summarized in Table 8.

Table 8

ELLCO Pre-K Indicators Categorized as Elements of Process Quality

	Physical elements	Social elements
Researcher	7	12
Reviewer 1	8	11
Reviewer 2	8	11

Table 9 lists in detail for each category of physical and social elements related to the development of language and early literacy the number of indicators agreed upon by the researcher with each peer reviewer.

Table 9

Agreement of ELLCO Pre-K Elements of Process Quality

# Inspected	# Matched Physical elements	Percent agreement	95% Lower Bound
	Researcher, Reviewer 1		
7	7	100.00	65.18
	Researcher, Reviewer 2		
7	7	100.00	65.18
	# Matched Social elements		95% CI
	Researcher, Reviewer 1		
12	11	91.66	[61.52, 99.79]
	Researcher, Reviewer 2		
12	11	91.66	[61.52, 99.79]

Note. CI = confidence interval.

Results of data summarized in Table 9 show perfect agreement with both peer reviewers for categorizing physical elements of process quality. The percent of agreement between the researcher and both peer reviewers was very high (91.66%) for social elements of process quality having only one *ELLCO Pre-K* indicator in disagreement. The descriptors provided for *Environmental print* represented equal representation of each kind of element making it a judgment decision for which category

to choose. *Environmental print* was categorized as a physical element by both peer reviewers. The researcher chose to categorize *Environmental print* as a social element due to its use by teachers to share understanding, reflect on learning, and facilitate participation in order to develop children's print knowledge. Categorizing *ELLCO Pre-K* indicators as physical or social elements of process quality was necessary to further examine each indicator's quality rating.

Interrater reliability. Interrater reliability results of identifying physical and social elements of process quality as determined by the researcher and two peer reviewers when combined are summarized in Table 10. Strong agreement (94.74%) was found between the researcher and two peer reviewers when categorizing all physical and social elements of process quality for the *ELLCO Pre-K*.

Table 10

ELLCO Pre-K Attribute Agreement Analysis for Categorizing Between Appraisers

# Inspected	# Matched	Percent agreement	95% CI
19	18	94.74	[73.97, 99.87]

Note. # Matched = All appraisers' attributes agreed with each other.

In an effort to report how well all three raters agreed with categorizing physical and social elements, Fleiss' Kappa statistics have been calculated and are reported in Table 11. If kappa = 1, then there is perfect agreement. If kappa = 0, then agreement is the same as would be expected by chance. The higher the value of kappa, the stronger the agreement between appraisers. For the *z*- and *p*-values, the hypothesis being tested is:

H_0: The agreement between appraisers is not due to chance.

H_1: The agreement between appraisers is due to chance.

Table 11

Fleiss' Kappa Statistics for ELLCO Pre-K Attribute Agreement

Response	Kappa	*SE* Kappa	*z*	*p (vs > 0)*
Physical	0.927110	0.132453	6.99953	0.0000
Social	0.927110	0.132453	6.99953	0.0000

Note. Single trial within each appraiser.

A kappa value of 0.927110 is almost perfect agreement between the three raters. Based on a *z*-score of 6.99953, the researcher failed to reject the null hypothesis. Agreement between appraisers was not due to chance.

Field test interrater reliability. Prior to the researcher collecting observation data in each participating preschool utilizing the *ELLCO Pre-K*, the researcher and a peer professional in the field of early childhood education jointly conducted observations in two preschools to provide interrater reliability. Each observation lasted an average of 3 hours 20 minutes. Interrater reliability was necessary to ensure that the researcher was using the observation tool as it was intended and rated each element appropriately as an expert in the field of early childhood education. Interrater reliability results for the degree of agreement for each element's rating score are listed for each preschool observed (see Table 12).

Table 12

ELLCO Pre-K Field Test Interrater Reliability

	Consensus	Rating difference of 1	Rating difference more than 1
Preschool 1	5	9	5
Preschool 2	5	11	3

Results from Table 12 indicate that the researcher and peer professional were in perfect agreement or rated indicators within one point for most of the *ELLCO Pre-K* tool (14-16 indicators out of 19). During both preschool observations, two indicators were rated more than one point difference: *Approaches to curriculum* and *Support for children's writing*.

Conversations between the researcher and peer professional about evidence for their ratings revealed differences in thinking about the type of evidence used to determine whether the curriculum meaningfully integrated concepts and skills, including support for children's writing (items evident in the room from past lessons or what was observed happening in that moment). The researcher and peer professional also discussed themes as a big idea for learning and how the environment supports the theme whether through a variety of teacher-directed activities or children's meaningful contributions using their language and literacy skills.

The location of the researcher and peer professional within the environment during the observations contributed to variations in evidence observed. For example, the researcher observed specific teacher-child interactions at the writing center that supported

a higher rating for children's writing, while the peer professional spent time observing children's participation in dramatic play. Observing an environment with a large group of children participating in a variety of activities at once made it challenging to document all the possible interactions that supported language and early literacy development. During the first field observation, there was one staff member observed working with seven children (1:7 ratio), and during the second field observation, three staff were observed working with fifteen children (1:5 ratio).

Field test 1 agreement between appraisers. Table 13 summarizes the results of the researcher and peer professional rating each element of process quality during a Field Test in Preschool 1. Only a 26.32% agreement existed for exact rating scores.

Table 13

ELLCO Pre-K Attribute Agreement Analysis for Field Test 1 Ratings Between Appraisers

# Inspected	# Matched	Percent agreement	95% CI
19	5	26.32	[9.15, 51.20]

Note. # Matched = All appraisers' scores agreed with each other.

Fleiss' Kappa statistics for agreement of ratings between the researcher and peer professional have been calculated and are reported in Table 14. For the *z*- and *p*-values, the hypothesis being tested is:

H_0: The agreement between appraisers is not due to chance.

H_1: The agreement between appraisers is due to chance.

Data were reported for how well the researcher and peer professional matched when assigning each rating score (1-5). When examining the overall results for Field

Test 1, a kappa value of 0.027422 was calculated resulting in fair agreement between the researcher and peer professional. An overall *z*-score of 0.22426 and a *p*-value of 0.4113 led the researcher to fail to reject the null hypothesis. Agreement between appraisers was not due to chance.

Table 14

Fleiss' Kappa Statistics for ELLCO Pre-K Field Test 1 Rating Agreement

Rating	Kappa	*SE* Kappa	*z*	*p (vs > 0)*
1	0.441176	0.229416	1.92304	0.0272
2	0.124424	0.229416	0.54235	0.2938
3	0.050000	0.229416	0.21794	0.4137
4	-0.130952	0.229416	-0.57081	0.7159
5	-0.151515	0.229416	-0.66044	0.7455
Overall	0.027422	0.122279	0.22426	0.4113

To report on the degree of association among the ratings between both appraisers, Kendall's coefficient of concordance was calculated (see Table 15). Kendall's coefficient of concordance uses information about relative ratings and is sensitive to the seriousness of the misclassification. Kendall's coefficient of concordance can range from 0 to 1. The higher the value of Kendall's, the stronger the association. Kendall's coefficients of 0.9 or higher are considered very good. Using the *p*-value, the hypothesis being tested is:

H_0: There is no association between the appraiser' ratings.

H_1: Ratings between appraisers are associated.

Kendall's coefficient of concordance for the *ELLCO Pre-K* Field Test in Preschool 1 yielded a coefficient value of 0.717181. Based on Kendall's coefficient value and the *p*-value of 0.1040, there was not enough evidence to reject the null hypothesis. In summary, *ELLCO Pre-K* ratings between both appraisers during Field Test 1 did not match well.

Table 15

Kendall's Coefficient of Concordance for ELLCO Pre-K Field Test 1 Rating Agreement

Coefficient	Chi – Square	*df*	*p*-value
0.717181	25.8185	18	0.1040

Field test 2 agreement between appraisers. Table 16 summarizes the results of the researcher and peer professional rating each element of process quality in Preschool 2. Only a 26.32% agreement existed for exact rating scores. These results happen to be the same as the number of ratings matched during Field Test 1.

Table 16

ELLCO Pre-K Attribute Agreement Analysis for Field Test 2 Ratings Between Appraisers

# Inspected	# Matched	Percent agreement	95% CI
19	5	26.32	[9.15, 51.20]

Note. # Matched = All appraisers' scores agreed with each other.

Fleiss' Kappa statistics for agreement of ratings between the researcher and peer professional have been calculated and are reported in Table 17. For the *z*- and *p*-values, the hypothesis being tested is:

H_0: The agreement between appraisers is not due to chance.

H_1: The agreement between appraisers is due to chance.

Data were reported for how well the researcher and peer professional matched when assigning each rating score (1-5). When examining the overall results for Field Test 2, a kappa value of -0.166667 was calculated resulting in agreement that was less than expected by chance. An overall *z*-score of -1.02572 and a *p*-value of 0.8475 led the researcher to fail to reject the null hypothesis. Agreement between appraisers was no stronger than due to chance.

Table 17

Fleiss' Kappa Statistics for ELLCO Pre-K Field Test 2 Rating Agreement

Rating	Kappa	*SE* Kappa	*z*	*p (vs > 0)*
2	-0.085714	0.229416	-0.37362	0.6457
3	-0.211594	0.229416	-0.92232	0.8218
4	-0.170868	0.229416	-0.74480	0.7718
5	-0.085714	0.229416	-0.37362	0.6457
Overall	-0.166667	0.162488	-1.02572	0.8475

To report on the degree of association among the ratings between both appraisers, Kendall's coefficient of concordance has been calculated and is reported in Table 18.

Kendall's coefficient of concordance uses information about relative ratings and is sensitive to the seriousness of the misclassification. Kendall's coefficient of concordance can range from 0 to 1. The higher the value of Kendall's, the stronger the association. The hypothesis being tested is:

H_0: There is no association between the appraisers' ratings.

H_1: Ratings between appraisers are associated.

Based on Kendall's coefficienct value of 0.454437 and a *p*-value of 0.5675, there was not enough evidence to reject the null hypothesis. In summary, ratings between both appraisers did not match well. In fact, appraisers' agreement on ratings during Field Test 2 was worse than reported during Field Test 1 (see Table 15).

Table 18

Kendall's Coefficient of Concordance for ELLCO Pre-K Field Test 2 Rating Agreement

Coefficient	Chi – Square	*df*	*p*-value
0.454437	16.3597	18	0.5675

Significance. The significance of using the *ELLCO Pre-K* to supplement the *ECERS-R* data was to use an observation tool that addressed the need for a literacy-rich environment in preschools. The use of an additional observation tool provided another snapshot of what occurred in a quality preschool environment, which addressed the limitation of having only one observation to obtain quality ratings. The ratings obtained from both the *ECERS-R* and *ELLCO Pre-K* provided information about elements of process quality within preschools' language and early literacy environments.

Kindergarten Assessment Instruments

Children's cognitive achievement was an outcome associated with the literacy readiness provided within preschool environments. Schools routinely assess children upon entry to kindergarten to determine prior knowledge and identify acquired early literacy skills. By acknowledging the developmental skills that each child attained and determining children's areas of strengths and needs, kindergarten teachers can foster their optimal development (Ionescu & Benga, 2007). Children continue to be assessed throughout kindergarten to monitor acquisition of early literacy skills.

For this study, the researcher analyzed four assessment instruments as dependent variables used to measure children's pre-reading and writing performance in the beginning of kindergarten. The assessment instruments used to measure children's pre-reading performance were currently being utilized by the school district as part of the kindergarten registration process and in the beginning of kindergarten to identify children's obtained early literacy skills. Teachers utilized the assessment results to guide daily instruction and provide supports for children. The writing assessment was chosen by the researcher as a developmentally appropriate tool to measure children's writing performance given District Writing Samples. The rationale for studying the pre-reading and writing performance of kindergarten children rather than third grade students, who are first to take the *Pennsylvania System of School Assessment (PSSA)*, was to minimize the time from a child's preschool experience and exposure to additional factors that contribute to later school success. The researcher was looking to gain knowledge about the influence quality preschool environments had on children's literacy readiness. The researcher associated each assessment's early literacy skills with key predictors of later

literacy achievement identified by the National Early Literacy Panel, which included Oral Language, Concepts About Print, Alphabet Knowledge, Phonological Awareness, Print Knowledge, and Writing (NIL, 2008). The assessment instruments analyzed as part of this study included the *Center for Improving the Readiness of Children for Learning and Education (CIRCLE)*, *Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next*, *Concepts About Print* tasks, and the *Conventions of Writing Developmental Scale*. A description of each assessment instrument is provided including a report on validity and reliability results.

Center for Improving the Readiness of Children for Learning and Education (CIRCLE)

The assessment instrument used to measure children's acquired early literacy skills during the kindergarten registration process was the *CIRCLE*. The *CIRCLE* assessment was developed at the Children's Learning Institute at the University of Texas Health Science Center–Houston as a reliable and valid assessment of the key early literacy skills outlined by the National Early Literacy Panel (NIL, 2008). The *CIRCLE* is a screening instrument used to measure young children's knowledge in the areas of language, literacy, mathematics, science and engineering, and social and emotional skills. The recommended population is for children who are at least 3 ½ years of age through kindergarten (Landry et al., 2014).

CIRCLE tasks related to language and early literacy were analyzed for the purpose of this study. The language task measured a child's vocabulary skills, while the early literacy tasks measured a child's alphabet knowledge and phonological awareness. Alphabet knowledge was assessed with a *CIRCLE* Rapid Letter Naming (RLN) task.

Children were evaluated on the number of uppercase and lowercase letters correctly named in 60 seconds. Vocabulary skills were measured with a *CIRCLE* Rapid Vocabulary Naming (RVN) subtest. Children were evaluated on the number of correctly named items given as many pictures as possible in 60 seconds. Phonological Awareness skills that were assessed included Listening, Rhyme Recognition, Rhyme Production, Alliteration, the ability to detect individual words within sentences, the ability to separate words into syllables, and Onset-Rime. The sum of correct items across all seven phonological awareness tasks determined a *CIRCLE* Phonological Awareness Composite score. The Listening section contained 5 items that evaluated whether a child could differentiate between similar sounding words. The Rhyming 1 subtest contained 9 items that evaluated whether a child could identify whether or not two words rhymed. The Rhyming Part 2 subtest contained 5 items where children were asked to provide a word that rhymed with another word. The Alliteration subtest contained 7 items that asked children to determine whether or not a pair of words began with the same sound. The Words in a Sentence subtest contained 5 items that required children to move manipulatives to indicate how many words were in a sentence. Sentence length varied from two words to six words. The Syllabication subtest contained 7 items that required children to demonstrate knowledge of how words could be broken down into syllables by clapping once for each syllable in a word. The Onset-Rime subtest contained 5 items that evaluated children's ability to blend a word given the beginning consonant(s) and the rest of a single syllable word. Results allowed teachers to identify areas of concern or strengths and plan instruction effectively (Landry et al., 2014).

The *CIRCLE* measures children's individual performance on Letters, Vocabulary, and Phonological Awareness three times per year (beginning, middle, and end) and is compared against cut point scores. Assessments administered to incoming kindergarten children in this study were from the *CIRCLE* MOY (middle of year) assessment period due to the timing of kindergarten registration. Scores from children 4 ½ years old or above were coded for either emerging understanding or proficient understanding (see Table 19).

Table 19

Cut Point Scores for CIRCLE Assessments

	Emerging	Proficient
Letters	0 – 12	13 +
Vocabulary	0 – 22	23 +
PA Composite	0 - 19	20 +

To determine validity and reliability of the *CIRCLE*, numerous research studies were conducted over the last four or five years in preschools and day cares in low income areas in Texas, Maryland, Ohio, and Florida. Children represented a diverse set of racial and ethnic groups and included an approximately equal number of males and females. The following results have been reported on the validity of the *CIRCLE*. Convergent validity was measured with the *CIRCLE* Vocabulary Naming subtest and the Expressive One Word Picture Vocabulary Test (EOWPVT). A correlation of .45 was obtained for all age groups during the spring assessment period. The Letter Naming subtest of the *CIRCLE* was correlated with the Preschool Comprehensive Test of Phonological Processing and Print Awareness (PreCTOPPP) Print awareness subscale. A correlation

of .79 was obtained for all age groups during the spring assessment period. The *CIRCLE* Phonological Awareness and component subtests were correlated with Developing Skills Checklist (DSC) and PreCTOPPP measures of blending and elision. A correlation of .37 was obtained for all age groups during the spring assessment period with the DSC, which was higher or equal to the correlations found with the *CIRCLE* Letter Naming (.37) and the *CIRCLE* Vocabulary Naming (.17) with the same DSC assessment. The correlation found between the *CIRCLE* Phonological Awareness Composite and the PreCTOPPP was .47. Concurrent validity was established with correlations between the three *CIRCLE* subtests (Letter Naming, Vocabulary Naming, and Phonological Awareness Composite) and three standardized tests measuring different but related constructs. Correlations ranging from .17 to .37 were found with the *CIRCLE* and DSC. Correlations ranging from .32 to .79 were found with the *CIRCLE* and Print. Correlations ranging from .40 to .47 were found with the *CIRCLE* and EOWPVT (Landry et al., 2014).

The following results have been reported on the reliability of the *CIRCLE*. Internal consistency was calculated for the Phonological Awareness subtests only, since it is not appropriate for speeded tests like the Rapid Letter Naming (RLN) and Rapid Vocabulary Naming (RVN). Cronbach coefficient alpha results were all greater than .90. Interclass correlation coefficients, which measured the proportion of variance within the same subject at different times, compared to the overall variance across times and subjects, revealed the following reliabilities for 5-year-olds: Letters .76, Vocabulary .65, and Phonological Awareness .66. Test-retest correlation coefficients were calculated for each language and early literacy assessment. The average Pearson correlation for the

Letters subtest for 5-year-olds over the three assessment periods was .74. The average Pearson correlation for the Vocabulary subtest for 5-year-olds over the three assessment periods was .62. The average Pearson correlation for the Phonological Awareness Composite for 5-year-olds over the three assessment periods was .65 (Landry et al., 2014).

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next

The assessment instrument used to measure children's pre-reading performance in the beginning of kindergarten was the *Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next*. The *Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next* is a standardized diagnostic achievement test used in elementary schools to identify a child's current level of proficiency in basic early literacy skills, which is predictive of later literacy achievement. In 2011, *DIBELS Next* was released by the Dynamic Measurement Group, Inc. as a revision to the *DIBELS*. The new instrument reflects an increase in its ease of use and accuracy of results (Good, Kaminski, Cummings et al., 2011).

DIBELS Next contains six indicators or measures that assess early literacy skills: Letter Naming Fluency (LNF), First Sound Fluency (FSF), Nonsense Word Fluency (NWF), Phoneme Segmentation Fluency (PSF), DIBELS Oral Reading Fluency (DORF), and Daze. Good, Kaminski, Cummings et al. (2011) defined an indicator or measure as a brief, efficient index that provides a fair degree of certainty about a larger, more complex system or process. Measures are administered individually to children in kindergarten through grade six three times per year – Fall, Winter, and Spring. Results help teachers identify children in need of intervention support with foundational early literacy skills.

Initial research on the *DIBELS* was conducted at the University of Oregon in the late 1980's and early 1990's. Research was conducted with the newest version, *DIBELS Next*, beginning in 2006 (Good, Kaminski, Cummings et al., 2011). The following results have been reported on the validity and reliability of the Letter Naming Fluency (LNF) and First Sound Fluency (FSF). Hintze, Ryan, and Stoner (2003) conducted a study with 86 kindergarten children from a mid-sized city in Northwestern Massachusetts. Results found concurrent validity of the *DIBELS* LNF with the *Comprehensive Test of Phonological Processing (CTOPP)*. Moderate to strong correlations ranged from .38-.59. *DIBELS Next* measures are known to have content validity as they were designed specifically to be linked to the 5 Big Ideas in early literacy identified by the National Reading Panel (NICHD Early Child Care Research Network, 2000b). For example, FSF was aligned with phonemic awareness. Good, Kaminski, Cummings et al. (2011) explained that LNF was not a big idea of reading but was related to basic early literacy skills. Being able to recognize and name letters is a strong predictor of later reading achievement, however, Good, Kaminski, Cummings et al. (2011) reported that learning letter-sound correspondences can result in reading acquisition without ever knowing the names of letters.

An alternate-form reliability study using *DIBELS Next* First Sound Fluency (FSF) was conducted by Cummings, Kaminski, Good, and O'Neil (as cited in Good, Kaminski, Dewey et al., 2011) with 1,345 kindergarten children in three Mid-West to Western states during the 2006-2007 school year. Results found sufficient reliability with a coefficient of .82 on a single form and .74 using a three-form aggregate. Dewey, Latimer, Kaminski, and Good (2012) also conducted an alternate-form reliability study with 688 children

from kindergarten through fifth grade in five Pacific Northwest region schools during the 2008-2009 school year. Kindergarten results for FSF found a reliability coefficient of .83 for single-form and .94 with repeated assessment across three forms suggesting a highly reliable measure. To examine if FSF was a valid measure of early phonemic awareness, a concurrent validity coefficient of .74 was obtained for FSF when correlated with Phoneme Segmentation Fluency (PSF) scores in the middle of kindergarten, while a predictive validity coefficient of .53 was obtained for FSF when correlated with PSF scores at the end of kindergarten (Dewey et al., 2012).

A study conducted by Powell-Smith, Good, Latimer, Dewey, and Kaminski (as cited in Good, Kaminski, Dewey et al., 2011) was conducted with 3,816 children from kindergarten through grade six in five West and Mid-West region states during the 2009-2010 school year. Criterion-related validity was established for the *DIBELS* Composite Score based on the *Group Reading Assessment and Diagnostic Evaluation (GRADE)* Total Test. The predictive validity coefficients administered in the beginning of kindergarten were reported as .52 for First Sound Fluency (FSF) and .39 for Letter Naming Fluency (LNF). The *DIBELS* Composite Score in kindergarten was reported as having moderate to strong correlation with the *GRADE* Total Test. Analysis results indicated an interrater reliability of .94 for kindergarteners who were administered the FSF and .99 for LNF. An interrater reliability of .97 for kindergarteners was also obtained for the *DIBELS* Composite Score. Alternative-form reliability was established for LNF with a reliability coefficient of .86 for single-form, and .95 for three-form, while an alternative-form reliability of .66 was obtained for the kindergarten Composite Score (Good, Kaminski, Dewey et al., 2011).

DIBELS Next measures analyzed for the purpose of this study included Letter Naming Fluency (LNF) and First Sound Fluency (FSF). LNF consisted of 110 mixed uppercase and lowercase letters used to measure a child's automaticity with recognizing individual letters and their letter names. FSF consisted of 30 items that measured a child's ability to isolate and identify the first phoneme in a word. Each measure took one minute per child to administer (Good, Kaminski, Cummings et al., 2011).

Performance results from Letter Naming Fluency (LNF) and First Sound Fluency (FSF) measures were compared to benchmark goals. *DIBELS Next* benchmark goals are criterion-referenced target scores indicating the level of skill in which a child is likely to achieve with subsequent reading outcomes (Good, Kaminski, Cummings et al., 2011). Children who achieve a benchmark goal have an 80-90% chance of achieving later reading outcomes given research-based instruction with a core class curriculum. *DIBELS Next* also indicates cut points for risk, which indicate the level of skill below which a child is unlikely to achieve later reading outcomes without additional, targeted instructional support. LNF does not have a benchmark goal, since the skill is not an instructional target, but an indicator of risk. The benchmark goal for FSF is 10, while the cut point for risk score is 5. *DIBELS Next* also reports Composite Scores, which are meant to provide the best overall estimate of a child's early literacy skills. Composite Scores are calculated by combining scores from more than one measure. Results are then compared to benchmark goals. Scores from the LNF and FSF acquired at the beginning of kindergarten were combined to create a Composite Score. The established *DIBELS Next* Composite benchmark goal is 26, while the cut point for risk score is 13 (see Table 20) (Dynamic Measurement Group, 2010).

Table 20

DIBELS Next Kindergarten Beginning of Year Benchmark Goals and Cut Points for Risk

Measure	Score	Score level
Letter Naming Fluency (LNF)	NA	
First Sound Fluency (FSF)	10+	At or Above Benchmark
	5-9	Below Benchmark
	0-4	Well Below Benchmark
Composite Score	26+	At or Above Benchmark
	13-25	Below Benchmark
	0-12	Well Below Benchmark

Utilizing *DIBELS Next* assessment data provided information pertaining to children's attainment of early literacy skills recognized by the National Early Literacy Panel (NELP) as predictors of later literacy achievement (NIL, 2008). Good, Kaminski, Cummings et al. (2011), however, failed to recognize Letter Naming Fluency (LNF) as a basic early literacy skill. The researcher chose to focus on the early literacy skills identified by NELP, which were consistent with those identified by Early Reading First (ERF) (Jackson et al., 2007; NIL, 2008). As a result, the researcher related Letter Naming Fluency to alphabet knowledge and print knowledge, while First Sound Fluency (FSF) was related to both alphabet knowledge and phonological awareness.

Concepts About Print (CAP)

The instrument used to measure children's phonological awareness and print knowledge in the beginning of kindergarten was a set list of *Concepts About Print (CAP)* tasks. *Concepts About Print* tasks are indicators of behavior which support reading and

writing acquisition. *CAP* tasks specific to beginning kindergarten early literacy attainment included holding a book properly, pointing left to right, demonstrating one-to-one correspondence, using beginning sounds, identifying a word, decoding words, counting the number of words on a page, and reading sight words. *CAP* tasks were designed to reveal what children already know about print and to help children become aware of how print works. *Concepts About Print* were selected from knowledge of the Pennsylvania Learning Standards (https://www.pakeys.org/pages/get.aspx?page=career_standards) and Common Core State Standards (http://www.pdesas.org/Standard/PACore) as clear goals and expectations for children's literacy learning based on current research. *CAP* tasks were categorized as foundational skills in the area of language and early literacy development specific to book handling, print concepts, phonological awareness, and phonics and word recognition.

Conventions of Writing Developmental Scale

The assessment instrument used to assess children's writing performance in the beginning of kindergarten was the *Conventions of Writing Developmental Scale*. The *Conventions of Writing Developmental Scale* is a tool used to assess children's District Writing Samples. The *Conventions of Writing Developmental Scale* was published in 1999 by the Wright Group/McGraw-Hill. There are eight levels described in the *Conventions of Writing Developmental Scale* that can determine a child's level of writing: 1 (*Emerging*), 2 (*Pictorial*), 3 (*Pre-communicative*), 4 (*Semi-phonetic*), 5 (*Phonetic*), 6 (*Transitional*), 7 (*Conventional*), and 8 (*Advanced*) (Feldgus & Cardonick, 1999). The researcher associated levels of writing with early literacy skills found by

NELP to have predictive relationships with later measures of literacy development (NIL, 2008). Level 3 (*Pre-communicative*) addressed writing one's name, while Level 4 (*Semi-phonetic*) examined one's ability to match letters to their sounds (alphabet knowledge) and write from left to right (Concepts About Print). Level 5 (*Phonetic*) assessed beginning phonological awareness and print knowledge. Developmental levels in the *Conventions of Writing Developmental Scale* were established based on J. Richard Gentry's beliefs of children's understanding of phonics and their use of visual memory of how words work. When children write, they form the letters that stand for the sounds in a word. They use what they know about letter-sound associations to write words. The descriptors provided for each level are designed to be developmental, whereas children may not demonstrate all the characteristics listed in a given level. To determine a child's developmental level, more than half of a level's descriptors must apply to a child's writing sample (Feldgus & Cardonick, 1999).

The *Conventions of Writing Developmental Scale* is intended to be used by teachers to understand children's progress in learning to read and write. Children engage in writing for the purpose of communicating their ideas in a supportive environment (Feldgus & Cardonick, 1999). The teacher plays a supportive role by encouraging children to write using invented spelling. Invented spelling, a term coined by Charles Read in 1975, is the process of writing words phonetically based on children's memory of visual patterns (Gentry, 2010; Whitehurst & Lonigan, 1998). Since the scale's development in the late 1990's, many adaptations have been made with each one building on the success of others. To date, there have been no studies written that report on the reliability of the *Conventions of Writing Developmental Scale*.

Both the observation instruments and assessment instruments have been identified for the purpose of this study and discussed as they relate to the development of early literacy skills. The *ECERS-R* and *ELLCO Pre-K* were described as observation instruments used to assess elements of process quality within a preschool's language and early literacy environment. Both observation instruments reflect Vygotsky's theory involving quality interactions with other people and material tools that promote developmentally appropriate practices and positive outcomes for children's development. Specific physical and social elements of process quality were identified for each instrument as they pertained to preschools' language and early literacy environments. The *Center for Improving the Readiness of Children for Learning and Education (CIRCLE), Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next, Concepts About Print* tasks, and the *Conventions of Writing Developmental Scale* were described as assessment instruments used to measure children's acquired early literacy skills. The early literacy skills associated with each assessment instrument were recognized as strong predictors of later reading achievement. The following sections explain how and when the data were collected from each instrument, a summary of the data collected, and how it will be analyzed to determine whether and to what degree a relationship exists.

Data Collection Procedures

Prior to beginning the study, application was made to Indiana University of Pennsylvania's Internal Review board (IRB). The application contained information regarding the purpose of the study, participant selection process, research methodology, and benefits of the study. After receiving IRB approval, the researcher provided a copy of the Indiana University of Pennsylvania IRB approval letter to each participating

organization: school district, preschools, and Office of Child Development and Early Learning (OCDEL) (see Appendices B, C, and D).

School District

The researcher contacted the school district's Superintendent via email to explain the purpose of the study as it related to the school district's involvement. Permission was sought by the Superintendent via a Letter of Intent to obtain information relevant to kindergarten children in the chosen rural school district (see Appendix E). Approval was obtained by the Superintendent in a consent letter. The Elementary Principal received a copy of the consent letter, which outlined the specifics of the study. The signature of the Superintendent served as verification that permission was granted to the researcher to gather data from the Elementary Principal's school. The data collected included kindergarten children's preschool information, current descriptive and demographic data, and kindergarten assessment data as described below.

Preschool information. Not every kindergarten child attended preschool; however, for those who did, the name of the preschool attended was obtained from children's Kindergarten Registration Screening Forms. The researcher created a list of preschools from which the district's kindergarten children attended. The list assisted with the process of purposive sampling as per the researcher's defined criteria for selecting participating preschools. The qualifying criteria as previously stated, was as follows: 1) Had a minimum of three children who attended kindergarten in the chosen school district of study, 2) Had a completed evaluation by Pennsylvania's Office of Child Development and Early Learning utilizing the *ECERS-R* as part of Keystone STARS, and 3) Utilized a research-based, developmentally appropriate curriculum. The researcher

counted the number of kindergarten children who attended each preschool. Preschools having at least three kindergarten children who attended their facility met the first criteria for eligibility to participate in the study. The researcher then identified which preschools participated in Keystone STARS. Preschools participating in Keystone STARS and their current STAR rating were retrieved from http://www.pakeys.org/pages/stars_centers.aspx. The researcher contacted an Educational Research Associate employed by OCDEL to determine which STAR preschools had an evaluation utilizing the *ECERS-R*, which met the second criteria for eligibility to participate in the study. Whether or not each preschool utilized a research-based, developmentally appropriate curriculum was obtained by the researcher via each preschool's web-site. A developmentally appropriate curriculum was defined as one that reflects Vygotsky's perspective of intellectual development, and was supported by NAEYC's belief of developmentally appropriate practices (IRA, 1998).

After using the established criteria set by the researcher to identify eligible preschools for the study, the researcher contacted the Director of each preschool by phone to schedule a visit. The purpose of the visit was to meet the Director and issue a Letter of Intent describing the nature of the research study (see Appendix F). The researcher explained that participation was voluntary but compensation would be offered for participating. The researcher communicated that choosing to participate could result in the Director of the preschool gaining knowledge that would guide staff development and possibly modify instructional practices related to the development of language and early literacy skills. If in agreement to participate in the study, the Director was asked to sign a letter granting the researcher permission to conduct research at that site. A final

list of preschools agreeing to participate in the study ($N = 4$) was created and later used for communication with an Educational Research Associate employed by OCDEL. After permission was granted from each preschool, the researcher arranged a later date and time to return and conduct an observation utilizing the *ELLCO Pre-K*. The researcher presented the Director with a *Response Survey for Participating Preschools* for the purpose of obtaining additional information that could contribute to the process quality results of each preschool's language and early literacy environment (see Appendix G). Information on the *Response Survey for Participating Preschools* pertained to years of experience, staff turnover, the educational attainment of staff and field of study, curriculum, and assessments. The researcher explained that the completed *Response Survey for Participating Preschools* will be collected when returning to conduct the observation. Based on the qualifying criteria of participating preschools having a minimum of three children who attended kindergarten in the chosen school district of study, the researcher was then able to create a list of kindergarten children selected for participation ($N = 97$).

Participant demographic data. The researcher provided the list of participating kindergarten children to the Elementary Principal to begin to collect demographic data. The Elementary Principal provided the researcher with children's identification numbers, entry age to kindergarten (based on birthdates), gender, race, and socioeconomic status (based on eligibility for the federal free or reduced lunch program). This information was available from the district's student data management system. These independent variables were later examined in an effort to provide more in depth information to answer Research Question 3.

Figure 3 summarizes the number of participants and their entry age to kindergarten. Children eligible to enter kindergarten in the district chosen for this study must have been 5 years old (60 months) by September 1, 2014. Participants' age at entry to kindergarten is reported in months for the purpose of data analysis.

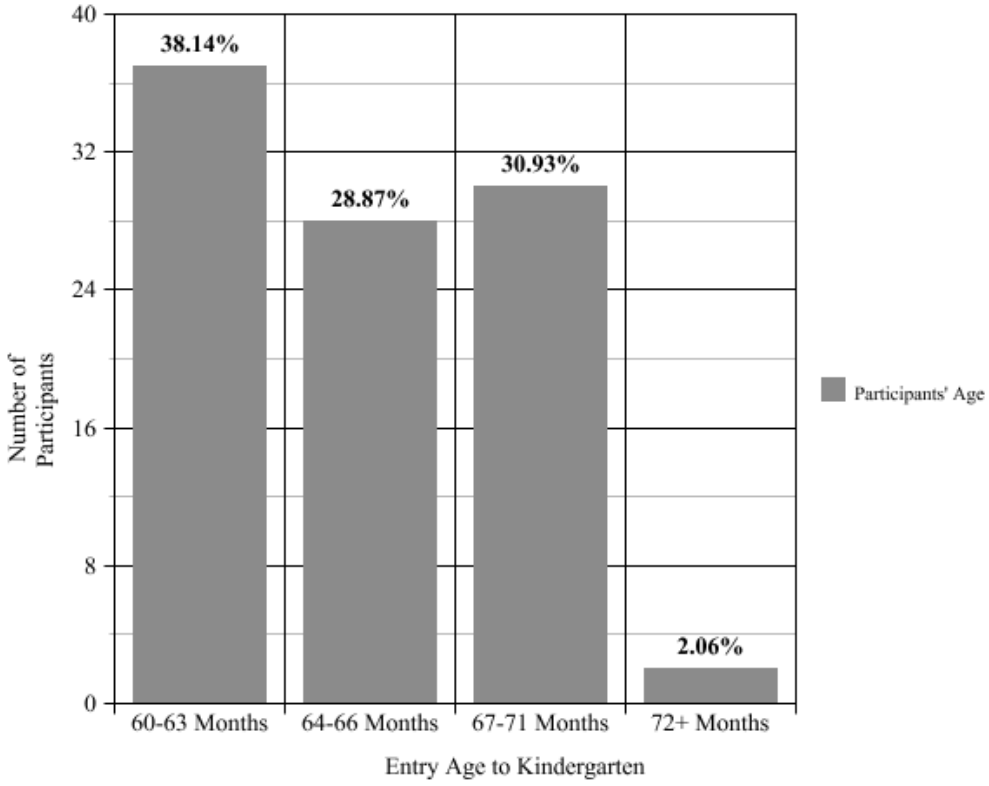

Figure 3. Participants' entry age to kindergarten.

Information in Figure 3 shows that children of various ages entered kindergarten once eligible at the age of five. Thirty-seven participants were 5 years to 5 years 3 months. Twenty-eight participants were 5 years 4 months to 5 years 6 months. Thirty participants were 5 years 7 months to 5 years 11 months. Two participants entered kindergarten at 6 years of age or older. Reasons may have involved parents' decision to redshirt their child in order to gain an additional year of development before beginning formal school.

Figure 4 summarizes the number of female and male participants. The number of male participants (n = 57) was higher than the number of female participants (n = 40). However, only a small percentage of difference existed (18%).

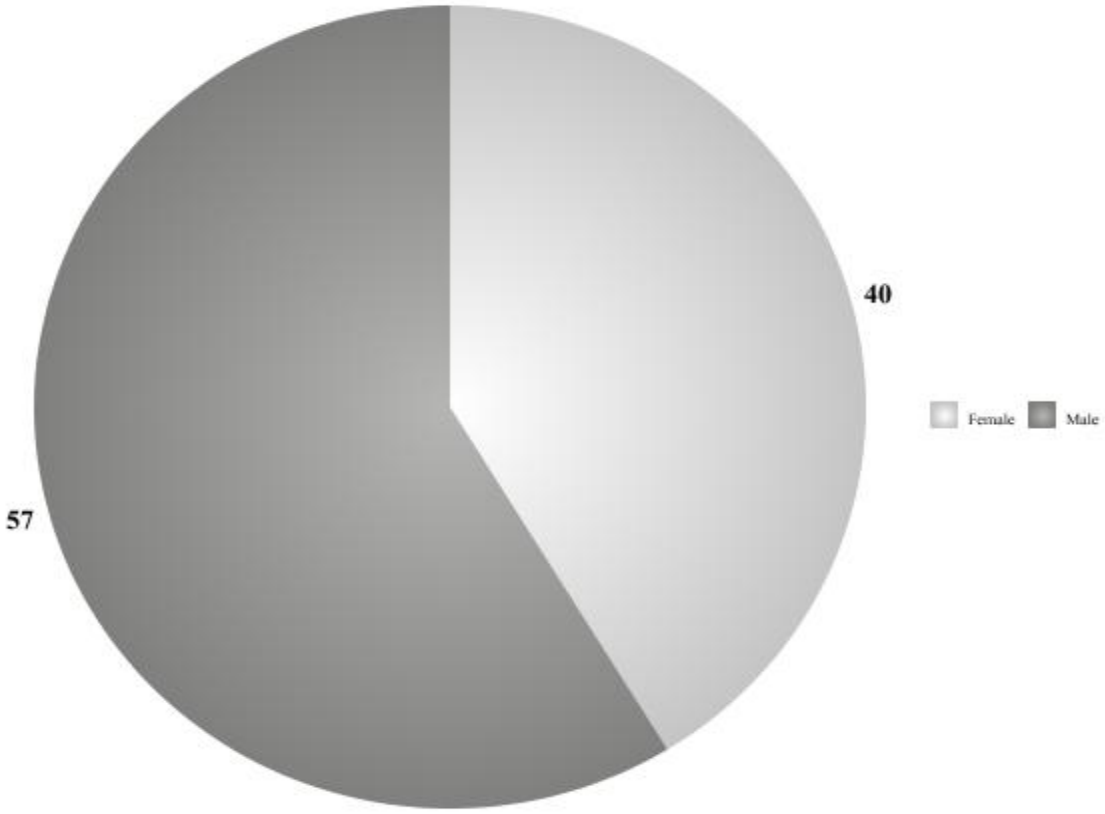

Figure 4. Gender of participants (N = 97).

Figure 5 identifies the race of children participating in the study. The majority of participants were White/Caucasian (80%).

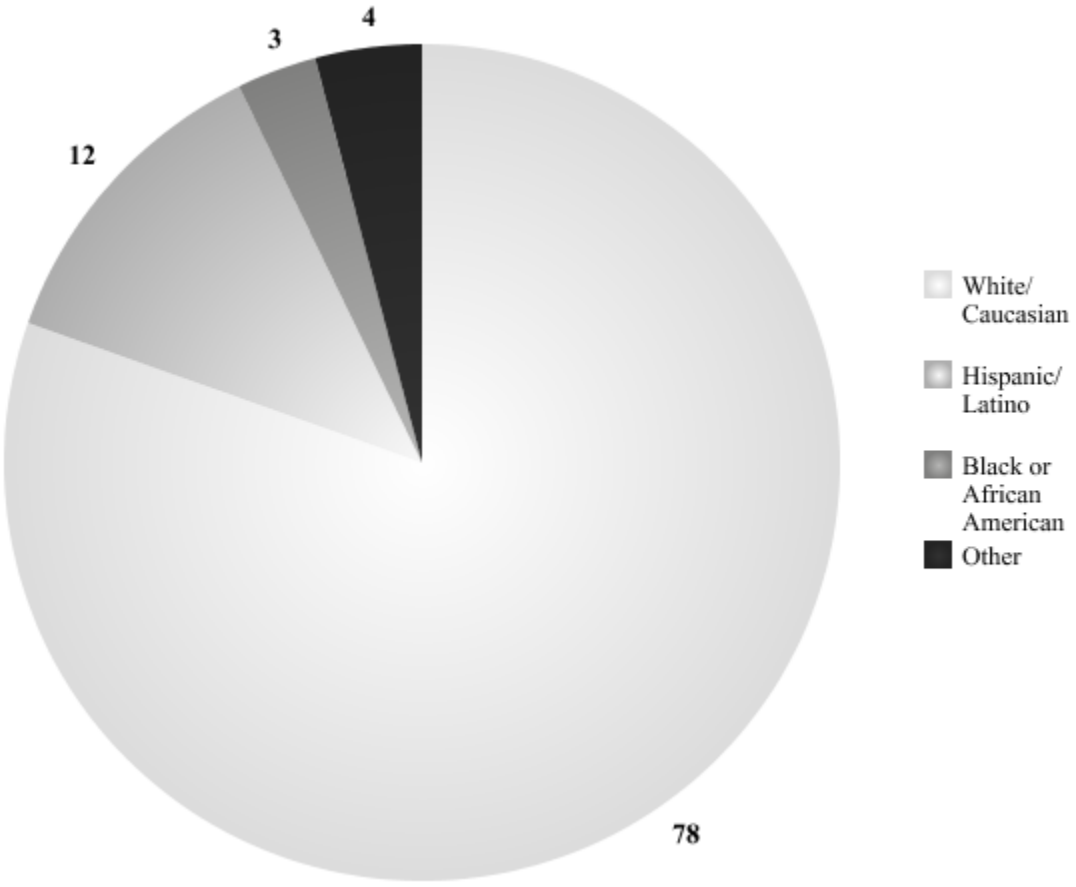

Figure 5. Participants' race (*N* = 97).

Figure 6 summarizes the number of participants having low socioeconomic status (based on eligibility for the federal free or reduced lunch program) and the number of participants who did not have low socioeconomic status (paid lunch status). About one third of the participants (32%) qualified for free/reduced lunch, which categorized them as having low socioeconomic status.

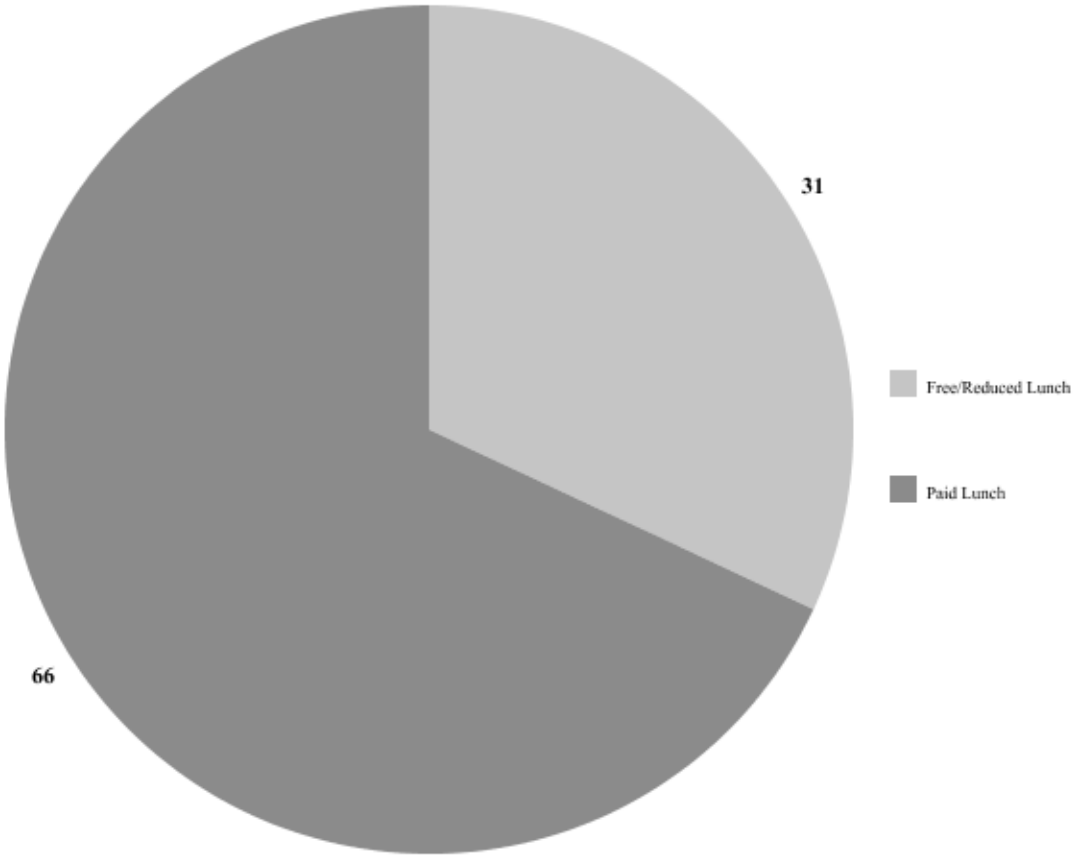

Figure 6. Socioeconomic status of participants (*N* = 97).

Information obtained from the Elementary Principal was entered in an Excel file with assigned codes and later uploaded to SPSS for analysis. Children who did not attend preschool were coded as 0, while children who did attend preschool were coded as 1. Entry age to kindergarten was identified by number of months. For the purpose of data analysis, the researcher categorized children's age into two groups. Children age 5 years thru 5 years 6 months were coded as 0 (*n* = 65). Children age 5 years 7 months and older were coded as 1 (*n* = 32). Gender was identified as 0 – female, 1 – male. Race was coded into four groups: 1 – White/Caucasian, 2 – Hispanic/Latino, 3 – Black or African American, and 4 – Other. Socioeconomic status, based on eligibility for the federal free or reduced lunch program, was coded as 0 – no, 1 – yes. At the conclusion of the study,

names of children were removed to maintain confidentiality, leaving their identification numbers associated with the data.

Kindergarten assessment data. The Elementary Principal also provided kindergarten pre-reading and writing assessment data for participating kindergarten children ($N = 97$). Assessment data were collected from the *Center for Improving the Readiness of Children for Learning and Education (CIRCLE), Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next, Concepts About Print* tasks, and District Writing Samples scored using the *Conventions of Writing Developmental Scale.*

Center for Improving the Readiness of Children for Learning and Education (CIRCLE). The school district administered the *CIRCLE* assessment during the kindergarten registration process. Scores obtained from the *CIRCLE* included tasks related to language and early literacy. Alphabet knowledge was assessed with a Rapid Letter Naming (RLN) task. Vocabulary skills were measured with a Rapid Vocabulary Naming (RVN) subtest. Phonological Awareness skills were assessed with seven different tasks, which combined to result in a PA Composite score (Landry et al., 2014). Data were reviewed to determine kindergarten children's proficiency for each score reported: RLN, RVN, and PA Composite score. The data obtained were used in binary logistic regression analyses which contributed to answering Research Question 1. Figure 7, Figure 8, and Figure 9 summarize the number of participants who achieved proficiency for each *CIRCLE* assessment score. Data were not available for seven participants due to their date of enrollment in the school district. Students enrolled after August 20, 2014 were not assessed with the *CIRCLE* assessment.

Data displayed in Figure 7 shows that 49 participants (50.52%) achieved proficiency on the Rapid Letter Naming (RLN) task of the *CIRCLE* assessment. Proficiency meant that children could accurately name a minimum of 13 uppercase and lowercase letters in one minute.

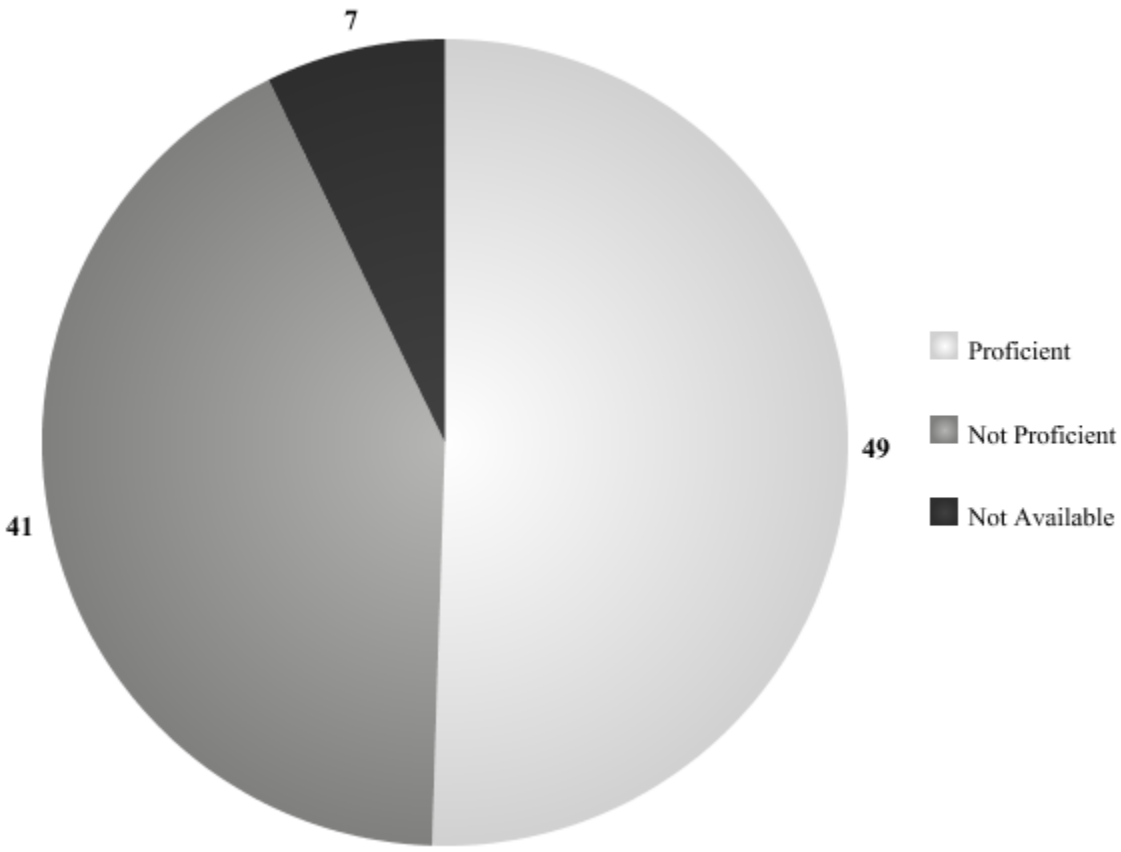

Figure 7. CIRCLE assessment results for Rapid Letter Naming (RLN) (*N* = 97).

Data displayed in Figure 8 shows that 52 participants (53.61%) achieved proficiency on the Rapid Vocabulary Naming (RVN) task of the *CIRCLE* assessment. Proficiency meant that children could accurately name a minimum of 23 pictures presented in one minute.

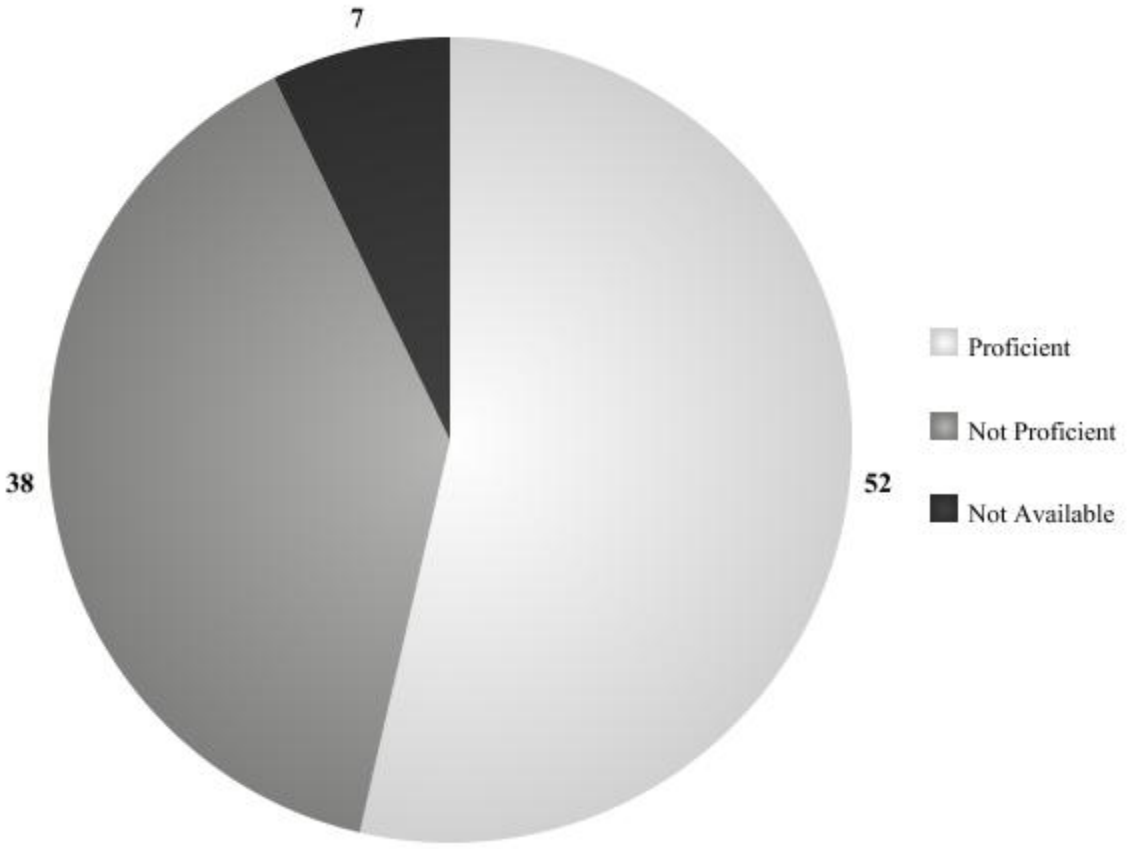

Figure 8. CIRCLE assessment results for Rapid Vocabulary Naming (RVN) (*N* = 97).

Data displayed in Figure 9 shows that 75 participants (77.32%) achieved proficiency on the PA Composite section of the *CIRCLE* assessment. Proficiency meant that children achieved a minimum score of 20 given seven phonological awareness tasks. Children were assessed on their ability to discriminate sounds at the beginning and end of words, identify and recall rhyming words, indicate the number of words in a sentence, clap syllables in a word, and blend parts of a given word.

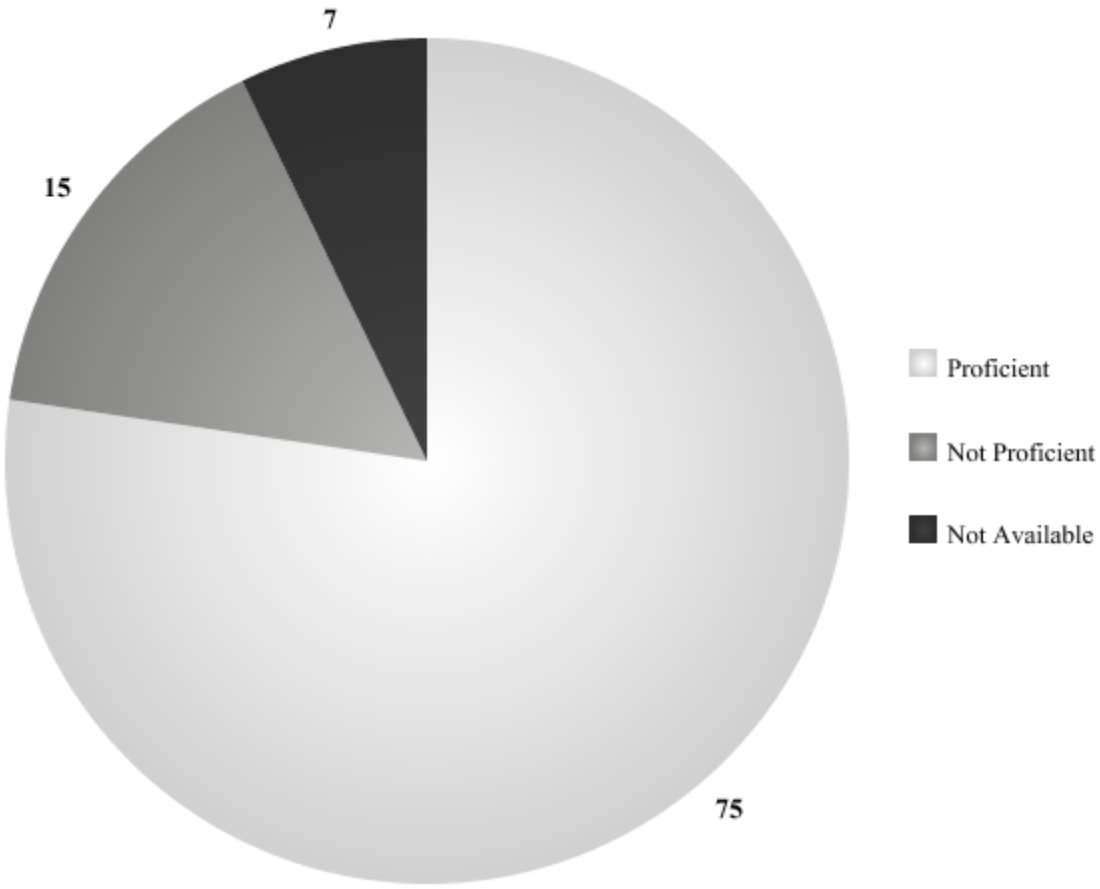

Figure 9. CIRCLE assessment results for PA Composite (*N* = 97).

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next. The school district administered two *DIBELS Next* measures in the beginning of kindergarten. Measures included Letter Naming Fluency (LNF) and First Sound Fluency (FSF). Scores from LNF and FSF were combined to create a Composite Score (Good, Kaminski, Cummings et al., 2011). Scores obtained from *DIBELS Next* related to alphabet knowledge, print knowledge, and phonological awareness. Data were reviewed to determine whether children were proficient by reaching a level At or Above Benchmark. The data obtained were used in binary logistic regression analyses which contributed to

answering Research Question 1. Figure 10 summarizes the number of participants who achieved proficiency on the *DIBELS Next*. Data were not available for three participants.

Data displayed in Figure 10 shows that 58 participants (59.79%) achieved proficiency by reaching a level At or Above Benchmark after combining scores from *DIBELS Next* LNF and FSF for a Composite Score. Proficiency meant that children achieved a minimum score of 26 when combining the number of mixed uppercase and lowercase letters named in one minute with the number of beginning phonemes identified in words given one minute.

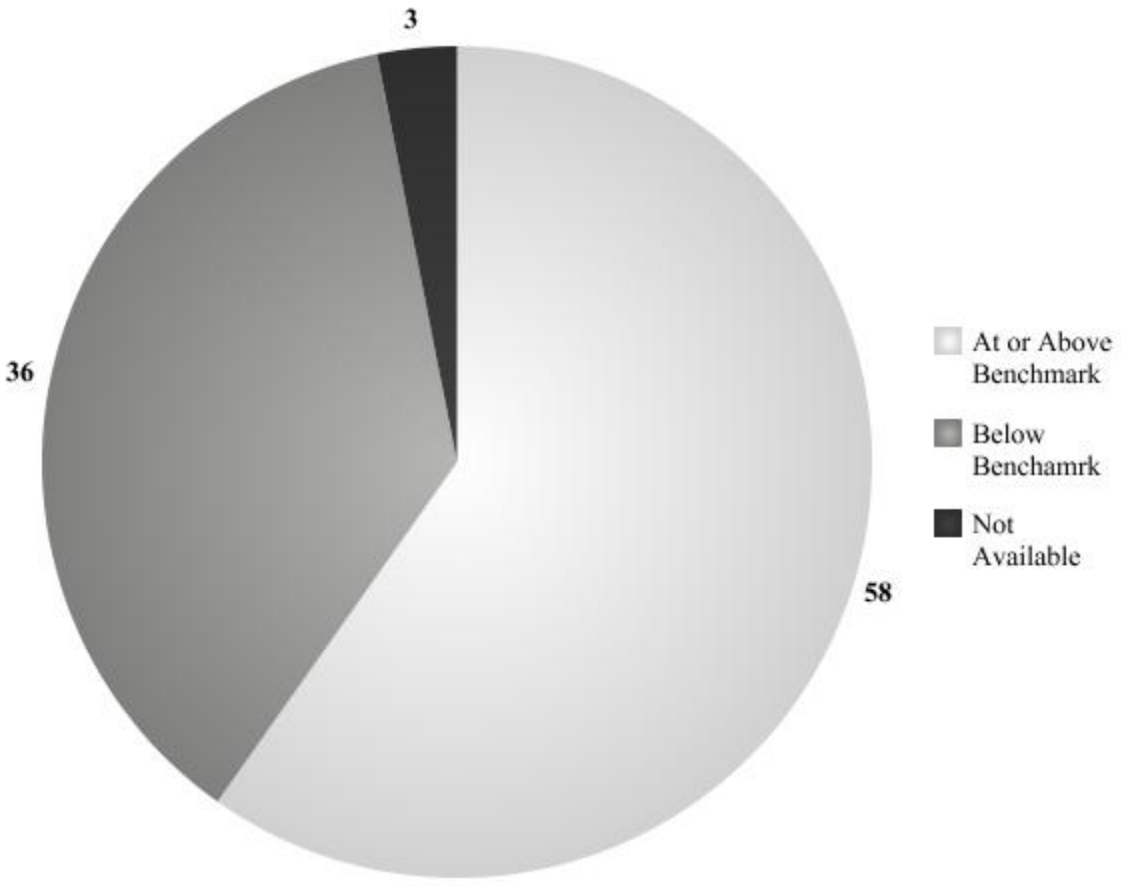

Figure10. DIBELS Next assessment results (*N* = 97).

Concepts About Print (CAP). The school district evaluated children's knowledge of various *Concepts About Print (CAP)* tasks in the beginning of kindergarten. Scores obtained from *Concepts About Print* tasks measured kindergarten children's phonological awareness and print knowledge. *CAP* tasks included holding a book properly, pointing left to right, demonstrating one-to-one correspondence, using beginning sounds, identifying a word, decoding words, counting the number of words on a page, and reading sight words. Kindergarten Marking Period 1 Report Cards were reviewed to determine whether children Met or Exceeded Expectations. The data obtained were used in binary logistic regression analyses which contributed to answering Research Question 1. Figure 11 summarizes the number of participants who Met or Exceeded Expectations with *CAP* tasks. Data were not available for two participants due to their date of enrollment occurring after the first marking period.

Data displayed in Figure 11 shows that only 4 participants (04.12%) Met or Exceeded Expectations with various *Concepts About Print* tasks. *Concepts About Print* are taught throughout kindergarten, so opportunities for children to acquire all eight *CAP* skills exist each marking period.

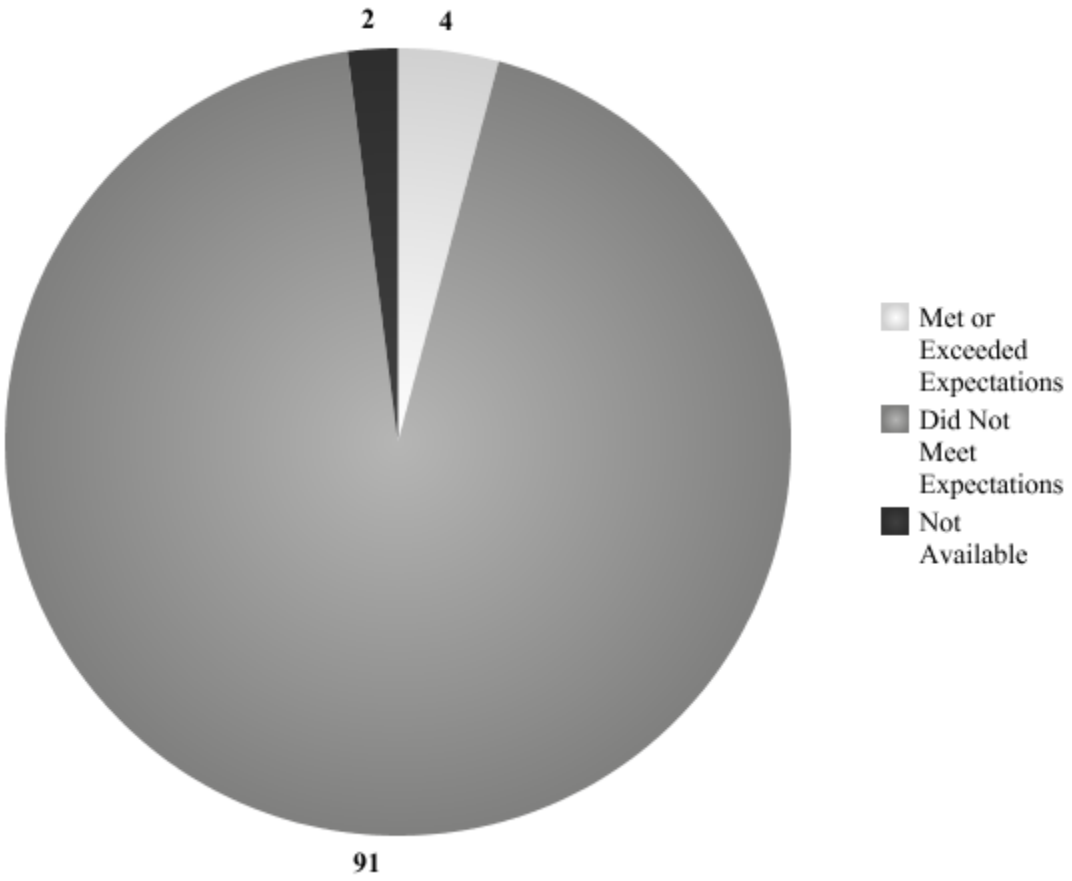

Figure 11. Concepts About Print results (*N* = 97).

Conventions of Writing Developmental Scale. The final kindergarten assessment data included in this research were District Writing Samples scored using the *Conventions of Writing Developmental Scale*. The school district collected a sample of children's writing in the beginning of kindergarten. The researcher scored each child's writing sample by assigning a performance level to be used in later data analyses. To determine each student's writing performance level, the researcher utilized the eight levels described in the *Conventions of Writing Developmental Scale* (Feldgus & Cardonick, 1999). The original eight performance levels from the *Conventions of Writing Developmental Scale* were combined into three levels for analysis purposes:

Exploring, Developing, and Mastering early literacy skills. Children whose level of writing was determined to be 1 (*Emerging*) or 2 (*Pictorial*) were considered Exploring early literacy skills. Children whose level of writing was determined to be 3 (*Pre-communicative*), 4 (*Semi-phonetic*), or 5 (*Phonetic*) were considered Developing early literacy skills. Children whose level of writing was determined to be 6 (*Transitional*), 7 (*Conventional*), or 8 (*Advanced*) were considered Mastering early literacy skills. The levels of Exploring, Developing, or Mastering early literacy skills were used in binary logistic regression analyses which contributed to answering Research Question 2. Figure 12 summarizes participants' writing level resulting in data for only two out of three levels of writing performance: Developing and Mastering. Data were not available for twenty participants due to their date of enrollment occurring after District Writing Samples were collected or due to samples not being available from the school district.

Data displayed in Figure 12 shows that participants were either Developing (n = 45) or Mastering (n = 32) their writing abilities. Developing writing skills meant children were either writing strings of random letters, beginning to match sounds to letters especially at the beginning or ending of words, or even writing an occasional known word. Some letter reversals were seen in children's writing. Mastering writing skills meant that children phonetically sounded out words, wrote most syllables in words (although some extra letters may have been added), and wrote frequently used words that were spelled correctly. Children used uppercase and lowercase letters and periods correctly. Spaces were usually visible between words.

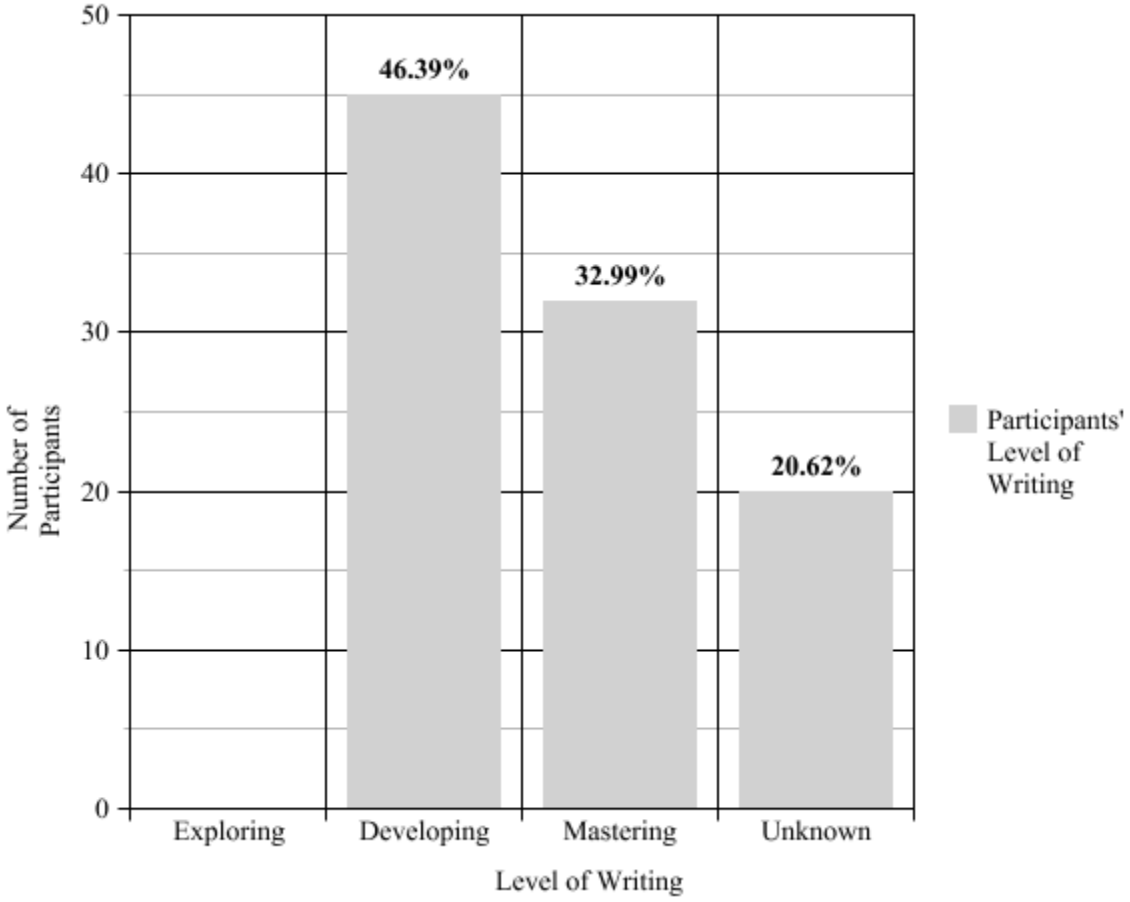

Figure 12. District Writing Samples/Conventions of Writing Developmental Scale.

Peer debriefing on children's level of writing. Peer debriefing occurred with the scoring of District Writing Samples in an effort to reduce bias. A professional knowledgeable about early literacy development reviewed each child's writing sample and assigned a writing level utilizing the *Conventions of Writing Developmental Scale*. Table 21 summarizes the level of agreement between the researcher and a peer professional for scoring children's level of writing. Consensus was attained for most of the samples reviewed.

Table 21

Agreement of Scoring Writing Sample Levels

	Consensus (/77)	Level difference of 1	Level difference more than 1
Categorized Level of Writing	70	7	0

Interrater reliability. Interrater reliability results of assigning a writing level for each child's writing sample as determined by the researcher and a peer professional is summarized in Table 22. A high percentage of agreement (90.91%) existed for assigned writing levels.

Table 22

Assessment Agreement of Writing Sample Levels Between Appraisers

# Inspected	# Matched	Percent agreement	95% CI
77	70	90.91	[82.16, 96.27]

Note. # Matched = All appraisers' levels agreed with each other.

Fleiss' Kappa statistics for agreement of writing levels for each child's writing sample have been calculated and are reported in Table 23. For the *z*- and *p*-values, the hypothesis being tested is:

H_0: The agreement between appraisers is not due to chance.

H_1: The agreement between appraisers is due to chance.

A kappa value of 0.817071 is considered near complete agreement between both raters. A *z*-score of 7.16977 was calculated. Results led the researcher to fail to reject the null hypothesis. Agreement between appraisers was not due to chance.

Table 23

Fleiss' Kappa Statistics for Agreement of Writing Levels

Response level	Kappa	*SE* Kappa	z	*p* (vs > 0)
1	0.817071	0.113961	7.16977	0.0000
2	0.817071	0.113961	7.16977	0.0000

Assessment data were gathered from all four assessment instruments used to measure children's pre-reading and writing performance in the beginning of kindergarten. The number of participants who met proficiency was reported for each. Knowing participants' kindergarten assessment data was important information when analyzing whether a relationship existed with the physical and social elements of process quality in a preschool's language and early literacy environment.

Office of Child Development and Early Learning (OCDEL)

The researcher communicated via email and followed-up by telephone with an Educational Research Associate employed by Pennsylvania's Office of Child Development and Early Learning (OCDEL) to issue a Letter of Intent seeking to gather existing *ECERS-R* data from preschool observations conducted by trained personnel employed by OCDEL (see Appendix H). Permission was obtained via a consent letter from the Educational Research Associate to participate in the study. The researcher

provided a list of preschools agreeing to participate in the study to the Educational Research Associate. The Educational Research Associate provided the researcher with an *ECERS-R* Summary Report for each participating preschool. The *ECERS-R* Summary Reports provided rating scores for each indicator, in addition to detailed information about the rationale for scoring certain indicators and suggestions for improving the quality of developmentally appropriate practices within each preschool.

ECERS-R indicators with quality ratings. An *ECERS-R* rating score of 5 or higher was defined as *good* to *excellent* quality within a preschool's environment (Harms et al., 1998). Existing *ECERS-R* data obtained from OCDEL for each participating preschool yielded the following number of quality rating scores for indicators categorized as either physical or social elements of process quality (see Table 24). Also provided is the mean number of indicators that received a quality rating score and standard deviation for each category of elements.

Table 24

ECERS-R Quality Ratings by OCDEL

	# of Quality ratings Physical elements (/22)	# of Quality ratings Social elements (/15)
Preschool 1	13 (59.09%)	9 (60.00%)
Preschool 2	17 (77.27%)	12 (80.00%)
Preschool 3	16 (72.72%)	11 (73.33%)
Preschool 4	18 (81.81%)	10 (66.66%)
M	16 (72.72%)	10.5 (70.00%)
SD	2.16	1.29

As preschools participating in Keystone STARS, each was observed once annually by trained personnel employed by OCDEL to monitor the quality of the curriculum, environment, teacher-child interactions, and teaching practices with children. Observations occurred during the months of April, June, and October. With each participating preschool having a STAR 4 rating, it was anticipated that *ECERS-R* results reflected high standards of practice. Results of data summarized in Table 24 show the number of indicators that received an *ECERS-R* quality rating when categorized by physical and social elements yielding a mean of 72.72% and 70.00% respectively for each category. While more than half of the *ECERS-R* indicators received high quality ratings for both physical elements and social elements, Preschool 1 had the lowest results

of overall quality. About fifty-nine percent of physical elements for Preschool 1 received quality ratings, while 60% of social elements received quality ratings.

Results indicated that there are many indicators needing improvement, resulting in less than *good* to *excellent* quality ratings. A review of *ECERS-R* reports provided by OCDEL revealed the following information. All four preschools received a quality rating less than 5 for two indicators: *Space for gross motor play* (physical element) and *Toileting/diapering* (social element). Three out of four preschools received a quality rating less than 5 for four indicators: *Meals/snacks* (social element), *Safety practices* (social element), *Schedule* (physical element), and *Provisions for children with disabilities* (social element). According to *ECERS-R* reports, *Schedule* concerns had to deal with opportunities to play outside, the amount of time for gross motor play, or the length of transition times. With regards to transitions, quality preschools are expected to structure transition periods in order to minimize children's wait times, i.e., sing songs, do finger plays, or play language games. Two out of four preschools received a quality rating less than 5 for two indicators: *Use of TV, video, and/or computers* (physical element) and *Using language to develop reasoning skills* (social element). According to *ECERS-R* reports, many materials were available to support the development of reasoning skills, however, staff needed to engage children in conversation while using these materials to assist them in thinking through how they solved a problem or determined an answer.

When reviewing *ECERS-R* reports provided by OCDEL for indicators rated *good* to *excellent* quality, the following information was obtained. Eight indicators of *physical* elements received high quality ratings for all four preschools. Example indicators of high

quality included *Fine motor*, *Sand/water*, *Nature/science*, and *Group time*. A high quality rating for *Group time* meant that many opportunities were provided for children to be part of different groupings throughout the day. Seven indicators of *social* elements received high quality ratings for all four preschools. Example indicators of high quality included *Greeting/departing*, *Encouraging children to communicate*, *Informal use of language*, *Staff-child interactions*, and *Interactions among children*. High quality ratings for these indicators meant that staff helped children become involved in activities when they arrived. Activities involving communication took place during both free play and group times, children were asked questions to encourage engagement, staff added information to expand on ideas presented by children, and staff helped children develop appropriate social behavior with peers.

Average ECERS-R rating scores. In addition to examining the number of quality ratings for each category of elements, the researcher reviewed ratings for all indicators related to language and early literacy and calculated the average rating for each category: physical elements and social elements. Table 25 provides the mean rating on a scale of 1 (*inadequate*) to 7 (*excellent*) with 5 or higher being considered *good* to *excellent* quality. Results show all elements averaging a quality rating within the *good* to *excellent* range. Preschool 2 had the highest ratings of quality for physical and social elements. Preschool 1 and Preschool 3 had the lowest ratings for elements of process quality.

Table 25

Average ECERS-R Rating Scores for Elements of Process Quality

	Physical elements (/22)		Social elements (/15)	
	M	*SD*	*M*	*SD*
Preschool 1	5.48	1.60	5.31	2.32
Preschool 2	6.24	1.45	6.43	1.50
Preschool 3	5.67	2.08	5.87	1.60
Preschool 4	6.43	1.36	5.92	1.93

As one of two observation instruments utilized to identify elements of process quality within a preschool's language and early literacy environment, *ECERS-R* data obtained from OCDEL provided valuable information about participating preschools' ratings of quality. Both strengths and areas in need of improvement with children's opportunities and experiences for language and early literacy development were discussed. A close examination of *ECERS-R* indicators as physical or social elements of process quality and average quality ratings for each preschool were provided for examination.

Participating Preschools

In an effort to collect additional data on the quality of physical and social elements in preschools' language and early literacy environments, the researcher conducted an observation utilizing the *ELLCO Pre-K* in each participating preschool. Upon arrival, the researcher presented the Director with an Informed Consent Form to sign agreeing to participate in the study (see Appendix I). The researcher explained that

if staff demonstrated or stated any level of discomfort during the observation, the researcher would discontinue observing. The preschool could decide to withdraw from the study at any time. The researcher spent an average of 2 hours 35 minutes observing in each participating preschool. Observations occurred during the month of November. Using the *ELLCO Pre-K*, observation notes were written as evidence to support rating the level of quality for each physical and social element of process quality related to language and early literacy.

Staff-child ratios in participating preschools. Information pertaining to staff-child ratios from each observation is provided in Table 26, which could be a contributing factor when evaluating the quality of preschools' language and early literacy environments.

Table 26

Staff-Child Ratios in Participating Preschools

	Preschool 1	Preschool 2	Preschool 3	Preschool 4
# of Staff	2	3	3	2
# of Children	7	12	12	16
Staff-Child ratio	2:7	1:4	1:4	1:8

ELLCO Pre-K indicators with quality ratings. An *ELLCO Pre-K* rating score of 4 or 5 was defined as *strong* to *exemplary* quality within a preschool's environment (Smith et al., 2008). *ELLCO Pre-K* data obtained from the researcher's observation in each participating preschool resulted in the following number of quality rating scores for

indicators categorized as either physical or social elements of process quality (see Table 27). Also provided is the mean number of indicators that received a quality rating score and standard deviation for each category of elements.

Table 27

ELLCO Pre-K Quality Ratings by the Researcher

	# of Quality ratings Physical elements (/7)	# of Quality ratings Social elements (/12)
Preschool 1	4 (57.14%)	4 (33.33%)
Preschool 2	6 (85.71%)	9 (75.00%)
Preschool 3	6 (85.71%)	9 (75.00%)
Preschool 4	7 (100.00%)	10 (83.33%)
M	5.75 (82.14%)	8 (66.66%)
SD	1.26	2.71

Based on the results of data reported in Table 27, the number of indicators that received a quality rating as a result of the researcher's observations was highest with Preschool 4 and lowest with Preschool 1. Indicators categorized as physical elements received higher quality ratings (mean = 82.14%) than indicators categorized as social elements (mean = 66.66%).

Ratings for physical elements of process quality. After close examination of observation notes documented as sources of evidence by the researcher and a review of the descriptors provided by the *ELLCO Pre-K*, the following ratings were obtained. All

four preschools received *strong* to *exemplary* quality ratings for four indicators representing *physical* elements of process quality: *Organization of the classroom*, *Contents of the classroom*, *Opportunities for child choice and initiative*, and *Characteristics of book*. This meant that preschools' physical environments were arranged to support children's ability to independently and purposely engage in self-directed activities. Child-generated work that was displayed reflected their approaches to classroom tasks. Teachers organized and provided interesting experiences that actively facilitated children's learning. Flexible scheduling and grouping practices supported children's initiative in pursuing their own interests, questions, and ideas. The researcher observed free choice time that lasted about 25 minutes as children arrived. Center time ranged from 30-85 minutes, depending on the preschool, and outdoor play occurred in three preschools for about 25 minutes. Books available to children contained multiple genres and were on a variety of topics. In one preschool, the researcher observed *a girl using a recipe book in a kitchen center*. The difficulty of text was appropriate for the age and ability levels of the children (Smith et al., 2008).

Three out of four preschools received *strong* to *exemplary* quality ratings for two indicators representing *physical* elements of process quality: *Organization of the book area* and *Books for learning*. Quality preschool environments had well organized book areas that invited children freely and independently to access books on a consistent basis. Books related to topics being studied may have been available for children's use. Books were either used by children or with teacher guidance for meaningful purposes, such as enjoyment or educational purposes (Smith et al., 2008). The researcher observed *one boy pretending to read a book about bulldozers and dump trucks to another boy. A teacher*

read a book about colors of the rainbow to a girl during center time. A boy counted pictures in a book about numbers as his free choice activity, while a girl looked at a book about how to grow pumpkin pie. One girl listened to a book on CD. After snack time, a girl asked a teacher to look at a craft book with her.

Early writing environment was an indicator receiving the lowest quality ratings among all four preschools. While most of the evidence noted by the researcher was rated as *basic*, there were opportunities provided for children to see writing and use their emergent writing skills. However, the frequency that children were observed taking advantage of opportunities to write was limited. Lower ratings were attributed to little integration throughout the classroom and less motivation to engage in writing for meaningful purposes (Smith et al., 2008). Multiple examples of the written word were displayed for varied purposes of writing and communication. For example, *a song about the color orange was displayed on chart paper on an easel, a word web about emotions was displayed, a Morning Message was written on a whiteboard and read to the class, and name tags were created for children to hang on a center sign while they were participating*. One preschool had mostly teacher-generated writing or commercial products displayed. Most of the time, writing was clearly differentiated from art activities. Appropriate writing materials were available with some observed in use. Example materials available to children included *markers, crayons, stamps, colored pencils, pencils, plain paper, writing paper, empty journals, stencils, alphabet strip, and coloring/activity books*. The researcher observed *a girl writing a string of letters in an attempt to write words while working in a writing center. Students worked at a table stamping the letter W in blank paper-made books*.

Ratings for social elements of process quality. After analyzing quality ratings for *social* elements of process quality, all four preschools were rated *strong* to *exemplary* for two indicators: *Discourse climate* and *Efforts to build vocabulary*. Teachers listened attentively to children and encouraged them to listen to and respond to one another. Participation was encouraged of all children. The researcher observed *a teacher commenting "good one" to a child who gave an example of a tradition. One child thanked another for helping in the dramatic play center without teacher prompting*. In another preschool, *a child commented on another's work saying, "I love your turkey."* A teacher was observed *encouraging a boy to ask a girl if he can play at the corn table*. And in another preschool, the teacher posed various questions during different activities to engage children in conversations involving individual's ideas. For example, *"Which box can I put more crayons in? Why?" "What happened to the vegetable garden?" "What else can we do with it (besides angle the tube and place a ball in it)?" Efforts to build vocabulary* occurred with teachers showing excitement when modeling and introducing new and challenging words, such as *independent, absent, pattern, flippers, plush, twist, mat, attract, diving, stove, screw, handsaw, chainsaw, hacksaw, level, inside, patience, more, less,* and *echo*. Children were encouraged to provide their own definitions and understanding of word meanings, such as *easel, tradition, key,* and *limousine* (Smith et al., 2008).

Three out of four preschools received *strong* to *exemplary* quality ratings for six indicators representing *social* elements of process quality: *Classroom management, Personnel, Approaches to curriculum, Opportunities for extended conversations, Approaches to book reading,* and *Quality of book reading*. Clear expectations for

children's behavior were communicated with some reminders or reinforcement provided by teachers. Few conflicts arose with children. The researcher observed the following classroom management prompts and responses: *"Catch your words" (reminded children to raise their hand and wait to be called upon rather than calling out), "Marshmallows in" (quiet mouths), counting back from five to have children stop talking, "Don't worry about it, worry about you," "More eating, less playing please," and "Let him choose" (rather than giving a boy a crayon)*. Personnel interacted respectfully with each other, having a positive focus on children's engagement in learning activities. However, differentiation of their roles may have limited their opportunities to meaningfully engage children in learning activities. For example, the lead teacher was also the preparer of food in one of the preschools. *Approaches to the curriculum* involved meaningful themes (i.e., *family and friends, color pink, number 12, comparisons, in/out, big/medium/small*) with opportunities for children to use their language and early literacy skills to contribute to the learning process. Materials, activities, and interactions were sometimes integrated throughout the curriculum. *Opportunities for extended conversations* focused on children's ideas, experiences, and curriculum activities. Both structured and informal exchanges maximized talk that informed learning, whether to extend content knowledge or build specific oral language skills. The researcher observed discussions about *family traditions* and *bedtime routines*. Various questions were posed by teachers to extend conversations in various settings: *"What did you do? Tell us about it (turkey disguise)," "Not here today. If she went on vacation, where would she go?" "What happened to the peanut? How do you make peanut butter?" "Why does it (play doh) feel different?" "What are some other things that feel smooth? Feel bumpy?" "What did you do this*

weekend?" and *"What are you going to do with it (paper)?"* When a full book-reading session was observed, children were actively engaged in listening to and discussing the book. *Quality of book reading* involved teachers asking questions, making comments, and acknowledging children's contributions. Teachers used features of the text and pictures to encourage children's active engagement. Questions and comments fostered children's interest and comprehension (Smith et al., 2008). The following are example questions observed by the researcher during a read aloud: *"What does it mean to dose?" What does an elephant use his tusks for?"* and *"What does hilarious mean?"*

Two out of four preschools received *strong* to *exemplary* quality ratings for the *Phonological Awareness* indicator. Efforts were made to engage children in various interactions designed to build their awareness of sounds in language. The researcher observed teachers *differentiating uppercase and lowercase letters*. Teachers *prompted children to recall letter sounds, recall words that began with a particular letter, and identify sounds in the beginning, middle, and end of words.*

The following two indicators categorized as *social* elements of process quality received the lowest quality ratings among all four preschools: *Support for children's writing* and *Environmental print*. Children may have been observed writing as part of a teacher-organized activity, but may not have chosen to write on their own during play and choice time activities. Teachers may have acknowledged children's writing efforts, but offered little instruction. The researcher observed *a teacher showing a boy's nametag as a model to copy his name on a family portrait, children practiced writing their name on a worksheet, and children traced the letter W with a yellow highlighter*. Higher ratings could have been awarded for supporting children's writing if teachers were

available to support and encourage children's writing efforts in multiple ways throughout the classroom. Teachers are to serve as models, motivate children to write for varied and authentic purposes, and individualize instruction for children to form letters, recognize letters, and read and write their names and common words. Environmental print, while present throughout the classroom, may model proper print conventions, but may not be integrated into classroom routines and used in meaningful ways. For example, the researcher observed *empty charts for calendar time (Yesterday/Today/Tomorrow* and *Days of the Week)*. Teachers should use environmental print to facilitate participation, share understanding, and reflect on learning. Children should be using and creating environmental print to label, communicate, and/or express their ideas and opinions. Overall, indicators within the *Print and Early Writing* subscale of the *ELLCO Pre-K* received the lowest ratings as compared to other *ELLCO Pre-K* subscales.

Average ELLCO Pre-K rating scores. In addition to examining the number of quality ratings for each category of elements, the researcher reviewed ratings for all indicators related to language and early literacy and calculated the average rating for each category: physical elements and social elements. Table 28 provides the mean rating on a scale of 1-5 with 4 or 5 being considered *strong* to *exemplary* quality.

Table 28

Average ELLCO Pre-K Rating Scores for Elements of Process Quality

	Physical elements (/7)		Social elements (/12)	
	M	*SD*	*M*	*SD*
Preschool 1	3.43	1.13	3.00	1.35
Preschool 2	4.29	0.76	4.08	0.79
Preschool 3	4.43	0.79	4.08	0.79
Preschool 4	4.71	0.49	4.08	0.67

Results of Table 28 data show Preschool 1 having a mean quality rating of below 4 for both physical and social elements of process quality, which is a concern for a STAR 4 preschool.

As the second observation instrument utilized to identify elements of process quality within a preschool's language and early literacy environment, results of *ELLCO Pre-K* data obtained from the researcher's observations provided valuable information about participating preschools' ratings of quality. Both strengths and areas in need of improvement with children's opportunities and experiences for language and early literacy development were discussed. A close examination of *ELLCO Pre-K* indicators as physical or social elements of process quality and quality ratings for each preschool were provided for examination.

Comparison of ECERS-R and ELLCO Pre-K data collected. After examining data from both observation instruments, the researcher found strengths and weaknesses in ratings for elements of process quality related to language and early literacy. Table 24

and Table 27 summarized the number of indicators categorized as physical and social elements that received a quality rating score for each observation tool. Since each observation tool had a different number of physical and social elements, the researcher examined the percentage of elements rated high in quality for comparison purposes. Preschool 1 had 60.00% of its social elements rating high in quality from the *ECERS-R*, but only 33.33% of its social elements rated high in quality utilizing the *ELLCO Pre-K*. Even though a great percentage difference existed, the researcher found strong ratings of social elements between both observation tools. Conversations, interactions, language, and vocabulary were found to be rated high in quality from both observation tools. These indicators were part of *The Language Environment* subscale from the *ELLCO Pre-K* and the *Language Reasoning and Interaction* subscales from the *ECERS-R*.

Other elements that had a large discrepancy in percentages between both observation tools were the physical elements for Preschool 4 and the social elements for Preschool 4, each having about a 15% difference with higher quality ratings from the *ELLCO Pre-K*. After a close examination of physical elements as quality indicators from both observation tools, *Contents of the classroom* from the *ELLCO Pre-K* involved the same descriptive characteristics as nine indicators from the *Activities* subscale on the *ECERS-R*. This was a strength that contributed to the number of indicators that received quality ratings for Preschool 4.

Table 25 and Table 28 summarized the average rating scores for each category of elements of process quality for each observation tool. Preschool 1 received higher ratings for both physical and social elements from the *ECERS-R* tool. The average rating of physical elements from the *ECERS-R* was 5.48 with 7 being the highest rating possible,

while the average rating of physical elements utilizing the *ELLCO Pre-K* was 3.43 with 5 being the highest rating possible. With social elements in Preschool 1, an average rating of 5.31 out of 7 was received from the *ECERS-R*, while 3.00 out of 5 was the result utilizing the *ELLCO Pre-K*. Preschool 2 also received higher ratings for the category of social elements from the *ECERS-R* tool, 6.43 out of 7 when compared to the *ELLCO Pre-K* with an average rating of 4.08 out of 5. All other preschools with their categories of physical and social elements were comparable with ratings when examining results from both observation tools.

Response Survey for Participating Preschools. Each participating preschool was presented with a *Response Survey for Participating Preschools* to complete for the purpose of obtaining additional information that contributed to the process quality results of each preschool's language and early literacy environment. Completed surveys were collected by the researcher from each participating preschool upon arrival to conduct an observation utilizing the *ELLCO Pre-K*. Qualitative data gathered from the *Response Survey for Participating Preschools* pertained to years of experience, staff turnover, the educational attainment of staff and field of study, curriculum, and assessments.

Years of experience for staff observed working with children in each participating preschool is summarized in Table 29. Based on the number of years experience working with preschool children age 4-5, Preschool 1 had the most veteran staff, while Preschool 4 had the newest/least experienced staff.

Table 29

Staff Years of Experience

	0 - 4 years	5 - 9 years	10 - 14 years	15 - 20 years
Preschool 1 (*n* = 2)	0	0	0	2
Preschool 2 (*n* = 3)	1	1	1	0
Preschool 3 (*n* = 3)	1	1	1	0
Preschool 4 (*n* = 2)	2	0	0	0

Information provided on the *Response Survey for Participating Preschools* found Preschool 1 to be the only participating preschool that had no turnover in staff from 2014 to 2015. All other preschools had one staff member that worked with preschool children age 4-5 when OCDEL observed with the *ECERS-R* that were not present when the researcher conducted observations utilizing the *ELLCO Pre-K*.

The educational attainment of staff and field of study data collected from each *Response Survey for Participating Preschools* is presented in Table 30. Data shows a variety of levels of educational attainment for preschool staff. More than one level of educational attainment may have been noted for a staff member. For example, a staff member in Preschool 1 earned a bachelor's degree in a field other than education and obtained a Child Development Associate (CDA) worth 9 college credits. A staff member in Preschool 4 earned both a bachelor's and master's degree in the field of education. It was important to note that Home Economics was a degree noted outside the field of education, while the other bachelor's degree not in education was unknown.

Table 30

Educational Attainment of Staff

	CDA	BA / BS		MS
		Education	Other	Education
Preschool 1 (*n* = 2)	2	0	1	0
Preschool 2 (*n* = 3)	1	1	1	0
Preschool 3 (*n* = 3)	1	1	1	0
Preschool 4 (*n* = 2)	0	2	0	1

Note. CDA = Child Development Associate; BA = Bachelor of Arts; BS = Bachelor of Science; MS = Master of Science.

Participating preschools were asked as part of the *Response Survey for Participating Preschools* which research-based developmentally appropriate curriculum, in addition to other resources, were currently being utilized. All four participating preschools responded using Creative Curriculum and the Pennsylvania Early Learning Standards. Preschool 2, Preschool 3, and Preschool 4 also utilized HighScope to develop children's language, early literacy, and communication skills.

When asked in the *Response Survey for Participating Preschools* if early literacy assessments were administered to preschool children and how often, the following responses were provided: Work Sampling and GRADE. The Work Sampling System is a criterion-referenced observational assessment used to collect information on children's work and compare it to grade-specific guidelines. GRADE (Group Reading Assessment and Diagnostic Evaluation) is a normative diagnostic reading assessment that determines

what developmental skills students have mastered and where they need instruction or intervention. Each assessment was administered three times a year.

After reviewing the qualitative data provided in each *Response Survey for Participating Preschools* with the quality ratings from each observation tool, the researcher noted the following pieces of information. Preschool 1 had no turnover in staff, staff had more than 15 years experience working with preschool children age 4-5, yet the preschool had the lowest quality rating scores overall. It was important to note that a staff member had a bachelor's degree in a field other than education. With consistent staff working with preschool children for a long time, it would be expected that this STAR 4 preschool would have evidence of higher quality opportunities and experiences for children's language and early literacy development. Preschool 4 was the only preschool where staff's level of educational attainment was all in the field of education. Preschool 4 also reported the highest degree held (master's degree) by a staff member. Preschool 4 reported to have the highest average ratings for elements of process quality from both observation tools (see Table 25 and Table 28). Table 26 noted Preschool 4 as having the highest staff-child ratio of 1:8, which seemed to have no affect on the preschool's quality ratings. Staff's educational attainment and field of study may have had a positive impact on the ability to manage a larger number of preschool children well to obtain high ratings of process quality.

Confidentiality Measures

Confidentiality was maintained throughout the data collection process. Demographic, assessment, and observation data collected were numerically coded, organized electronically using an Excel program, and imported to SPSS for analyses.

Data were stored on a flash drive in a safe accessed by a number code. All paper reports received prior to storing the information electronically were also stored in a safe accessed by a number code. The researcher was the only person with access to the code. Names of kindergarten children and participating preschools with their associated data were removed at the conclusion of the study to maintain confidentiality.

Data Analysis

Quantitative data that were collected from both observation and assessment instruments were analyzed using the SPSS statistical software program. The researcher examined scores from each element of process quality (physical and social) related to the development of language and early literacy skills from both observation tools, the *ECERS-R* and *ELLCO Pre-K*. There were 22 indicators from the *ECERS-R* that the researcher identified as physical elements of process quality and 15 indicators that represented social elements of process quality. There were 7 indicators from the *ELLCO Pre-K* that represented physical elements of process quality and 12 indicators that represented social elements of process quality. The average quality rating score for each element of process quality for each observation tool was used in binary logistic regression analyses. Field (2005) defined logistic regression as a means of predicting outcome variables that are categorical and yields, as part of its results, an odds ratio, which is a measure of effect size for categorical data.

Kindergarten Readiness Assessment results obtained during the kindergarten registration process utilizing the *CIRCLE* assessment were reported for each participant. Whether participants performed Proficient were coded 1 - yes, 0 - no for each score collected from the Rapid Letter Naming, Rapid Vocabulary Naming, and Phonological

Awareness Composite of subtests. A binary logistic regression analysis was conducted to examine the association of the independent variables of each process quality category from the *ECERS-R* and *ELLCO Pre-K*, entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff with the dichotomous dependent variables of *CIRCLE* assessment scores.

Pre-reading assessment results from the beginning of kindergarten were reported for each participant. A Composite Score was obtained from the *DIBELS Next* Letter Naming Fluency (LNF) and First Sound Fluency (FSF) scores combined. Whether each participant's *DIBELS Next* Composite Score reached the level At or Above Benchmark was coded as 1 - yes, 0 - no. A binary logistic regression analysis was conducted to examine the association of the independent variables of each process quality category from the *ECERS-R* and *ELLCO Pre-K*, entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff with the dichotomous dependent variable of *DIBELS Next* Composite Score.

Results from various *Concepts About Print* tasks obtained at the end of the first marking period were collected for each participant. To determine whether each participant demonstrated basic concepts of print, a score of 3 - Meets Expectations or 4 – Exceeds Expectations must have been achieved on the Marking Period 1 Report Card. Participants who Met or Exceeded Expectations for *Concepts About Print* were coded 1 – yes. Participants who scored a 2 – Making Adequate Progress Toward Expectations or 1 – Insufficient Progress Toward Expectations were coded 0 – no. A binary logistic regression analysis was conducted to examine the association of the independent variables of each process quality category from the *ECERS*-R and *ELLCO Pre-K*, entry

age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff with the dichotomous dependent variable of *Concepts About Print* score.

District Writing Samples were collected and scored by the researcher for each participant. Performance levels were determined using the *Conventions of Writing Developmental Scale*. The original eight performance levels were combined into three levels and coded as ordinal data for analysis purposes: 0 – Exploring early literacy skills (Levels 1-2), 1 - Developing early literacy skills (Levels 3-5), and 2 – Mastering early literacy skills (Levels 6-8). After analyzing the data (see Figure 12), only two levels of data existed for analysis purposes. Instead of an ordinal logistic regression analysis, the researcher conducted binary logistic regression analyses with these levels as the dependent variables and the independent variables of each process quality category from the *ECERS-R* and *ELLCO Pre-K*, entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff.

The alpha level, or level of significance, was set at $\alpha = .05$. Obtained correlation coefficient values were examined to determine statistical significance levels based on sample size. Significance levels represented the probability that the study's results occurred simply due to chance (Gay et al., 2009).

Basic descriptive statistical analyses for each kindergarten participant were collected to identify entry age to kindergarten, gender, race, and socioeconomic status. This information was used to provide more information related to children's literacy readiness in kindergarten. Qualitative data obtained from completed *Response Surveys for Participating Preschools*, such as the educational attainment of preschool staff, were examined as factors that contributed to the development of children's early literacy skills.

Chapter Summary

This chapter described the population and process for selecting both kindergarten children and preschool participants. Ninety-seven kindergarten children and four preschools were selected to participate in this study. Each observation and assessment instrument selected for use in this study was described in detail. The *Early Childhood Environment Rating Scale – Revised Edition (ECERS-R)* and the *Early Language and Literacy Classroom Observation (ELLCO) Pre-K* observation instruments provided strengths and needs about elements of quality within preschools' language and early literacy environments. Data collected from the *Response Survey for Participating Preschools* provided further information about preschools' staff, curriculum, and assessments. The *CIRCLE*, *DIBELS Next*, *Concepts About Print* tasks, and *Conventions of Writing Developmental Scale* were described in detail as assessment instruments used to measure children's acquired early literacy skills in the beginning of kindergarten. Assessment results revealed strong phonemic awareness and writing scores. Children demonstrated weak letter naming, vocabulary naming, and concepts about print skills based on the assessment data collected.

Results of peer debriefing and interrater reliability were reported for the *ECERS-R*, *ELLCO Pre-K*, and *Conventions of Writing Developmental Scale*. Results of categorizing *ECERS-R* and *ELLCO Pre-K* indicators as physical or social elements were not in total agreement. There was often a crossover of opportunities and experiences between both categories making the decisions difficult. The researcher discussed indicators from both observation tools and provided various examples of both physical and social elements of quality. Field testing the use of the *ELLCO Pre-K* resulted in

positive interrater reliability results. The researcher and peer reviewer agreed on rating scores within one point about 80% of the time. Results from the peer debriefing process used to score children's level of writing using the *Conventions of Writing Developmental Scale* yielded a high percentage of agreement resulting in reliable scores later used in data analyses to answer Research Question 2.

Procedures for collecting data were described as it pertained to the school district, the Office of Child Development and Early Learning, and participating preschools. Data were collected and explained in detail for further data analyses. Procedures for analyzing data were described. Chapter four will analyze the data as they pertain to the research questions. A summary of the findings from the data analyses will be reported.

CHAPTER FOUR

RESULTS

The purpose of this correlational study was to determine whether a relationship existed between the quality of a preschool's language and early literacy environment and children's pre-reading and writing performance in the beginning of kindergarten in a rural school district. Five additional variables, entry age to kindergarten, gender, race, socioeconomic status (based on eligibility for the federal free or reduced lunch program), and the educational attainment of preschool staff were also included to provide further information about participants' backgrounds and the relative influence of each of the variables.

This chapter includes an overview of the participants selected to be part of this study, the research design, and a review of the observation and assessment instruments used for the purpose of this study. Three research questions are presented followed by data analyses specific to each question. Results of the data analyses are discussed in relation to the purpose of this study.

Based on established criteria, preschools and kindergarten children were purposely selected for participation in this study. As a result, four preschools and ninety-seven kindergarten children qualified. The research design included quantitative data supplemented with qualitative data in the form of observation notes and information provided from a *Response Survey for Participating Preschools*. Data were collected regarding the quality ratings of physical and social elements of process quality in preschools' language and early literacy environments utilizing the *Early Childhood Environment Rating Scale – Revised Edition (ECERS-R)* and the *Early Language & Literacy Classroom Observation Tool (ELLCO Pre-K)*. Assessment data were collected

from the *Center for Improving the Readiness of Children for Learning and Education (CIRCLE), Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Next, Concepts About Print* tasks, and District Writing Samples scored using the *Conventions of Writing Developmental Scale* to measure participants' pre-reading and writing performance in the beginning of kindergarten. Binary logistic regression analyses were conducted with the independent and dependent variables for the purpose of determining whether relationships existed between the quality of a preschool's language and early literacy environment and children's pre-reading and writing performance in the beginning of kindergarten.

Analysis of the Data

To determine whether and to what degree relationships existed between the physical and social elements of process quality in preschools' language and early literacy environments and children's pre-reading and writing performance in the beginning of kindergarten, quantitative data were analyzed using binary logistic regression analyses to answer each of the study's research questions. The research questions and their associated hypotheses guided the data analyses. The level of significance, *a*, was set at .05 for each statistical test. The alpha level was set at an acceptable level for the population to allow a 5% chance that statistical results were inaccurate. For each statistical test, two-tailed predictions were used, which meant that no choice was made over the direction that the effect of the experiment took. Qualitative data were also reviewed to provide further information about elements of process quality in preschool environments and other factors that may have an influence on children's pre-reading and writing performance in the beginning of kindergarten. Each research question is

presented along with a description of how the data were analyzed. The data were then reported with an analysis of the findings presented.

Research Question 1

What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on measures of children's pre-reading performance in the beginning of kindergarten?

Binary logistic regression analyses were conducted with the independent variables of process quality categories from the *ECERS-R* and *ELLCO Pre-K* and the dependent variables of pre-reading assessment scores.

Average rating scores from observations. To analyze process quality categories from the *ECERS-R* and *ELLCO Pre-K*, the researcher utilized the average rating scores obtained from observation data collected from each participating preschool (see Table 25 and Table 28). Values for the physical elements and social elements from each observation tool are reported in Table 31.

Table 31

Average Rating Scores for Elements of Quality for Participating Preschools

	ECERS-R Physical elements	ECERS-R Social elements	ELLCO Pre-K Physical elements	ELLCO Pre-K Social elements
Preschool 1	5.48	5.31	3.43	3.00
Preschool 2	6.24	6.43	4.29	4.08
Preschool 3	5.67	5.87	4.43	4.08
Preschool 4	6.43	5.92	4.71	4.08

Data removed from analysis. Social elements of process quality from the *ELLCO Pre-K* could not be estimated and were removed from the regression analyses due to a lack of variance amongst data. The value of every preschool's *ELLCO Pre-K* average rating score for social elements of process quality was 4.08, except for the value of 3.00. There wasn't enough data at the 3.00 value (only three kindergarten children attended that preschool) to obtain any information, in addition to the rest of the values being the same. The same holds true for *Concepts About Print (CAP)* data. With 91 kindergarten children not meeting expectations with various *CAP* tasks and only four kindergarten children meeting expectations, there was a lack of variance amongst data (refer to Figure 11). Therefore, *CAP* data were removed from the regression analyses.

The possibility exists that if social elements of process quality from the *ELLCO Pre-K* were analyzed in regression analyses, relationships may be significant with children's performance on pre-reading and writing assessments. Phonological Awareness was identified by the researcher as a social element of process quality from the *ELLCO*

Pre-K. Phonological Awareness skills were assessed using the *CIRCLE* RLN, *CIRCLE* PA Composite, *DIBELS Next*, *CAP* tasks, and the *Conventions of Writing Developmental Scale*.

Qualifying data for analysis. The following data sources were adequate for use in regression analyses for the purpose of answering Research Question 1: physical and social elements of process quality from the *ECERS-R*, physical elements of process quality from the *ELLCO Pre-K*, scores from the *CIRCLE* Rapid Letter Naming (RLN), *CIRCLE* Rapid Vocabulary Naming (RVN), *CIRCLE* PA Composite, and *DIBELS Next*.

ECERS-R with CIRCLE Rapid Letter Naming (RLN). Physical and social elements of process quality from the *ECERS-R* were analyzed in binary logistic regression analyses with scores from the *CIRCLE* Rapid Letter Naming (RLN). Forty-nine participants were proficient in naming letters, while 41 participants were not proficient. Data were not available for 7 participants (see Figure 7). *CIRCLE* RLN scores for 90 participants were used for data analyses. The hypothesis being tested is:

H_0: A relationship does not exist between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RLN.

H_1: A relationship exists between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RLN.

Based on a *p*-value of 0.282 for the physical elements, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RLN. Based on a *p*-value of 0.653 for the social elements, the researcher failed

to reject the null hypothesis. A non-significant relationship existed between the social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RLN. Results of the data analyses revealed no significant relationships between the materials, opportunities, activities, and interactions measured with the *ECERS-R* in quality preschool environments with children's knowledge of naming uppercase and lowercase letters of the alphabet demonstrated in the beginning of kindergarten. Table 32 summarizes results of the binary logistic regression analyses.

Table 32

Deviance Table for ECERS-R Physical and Social Elements and CIRCLE Rapid Letter Naming (RLN)

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	2	2.470	1.2349	2.47	0.291
ECERS-R (Physical elements)	1	1.156	1.1559	1.16	0.282
ECERS-R (Social elements)	1	0.202	0.2017	0.20	0.653
Error	87	121.585	1.3975		
Total	89	124.054			

Note. Adj Dev = Adjusted Deviance.

ELLCO Pre-K with CIRCLE Rapid Letter Naming (RLN). Physical elements of process quality from the *ELLCO Pre-K* were analyzed in a binary logistic regression analysis with scores from the *CIRCLE* Rapid Letter Naming (RLN). Forty-nine participants were proficient in naming letters, while 41 participants were not proficient.

Data were not available for 7 participants (see Figure 7). *CIRCLE* RLN scores for 90 participants were used for data analysis. The hypothesis being tested is:

H_0: A relationship does not exist between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* RLN.

H_1: A relationship exists between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* RLN.

Based on a *p*-value of 0.107, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* RLN. Results of the data analysis revealed no significant relationship between the materials and opportunities measured with the *ELLCO Pre-K* in quality preschool environments with children's knowledge of naming uppercase and lowercase letters of the alphabet demonstrated in the beginning of kindergarten. Table 33 summarizes results of the binary logistic regression analysis.

Table 33

Deviance Table for ELLCO Pre-K Physical Elements and CIRCLE Rapid Letter Naming (RLN)

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	1	2.591	2.591	2.59	0.107
ELLCO Pre-K (Physical elements)	1	2.591	2.591	2.59	0.107
Error	88	121.464	1.380		
Total	89	124.054			

Note. Adj Dev = Adjusted Deviance.

ECERS-R with CIRCLE Rapid Vocabulary Naming (RVN). Physical and social elements of process quality from the *ECERS-R* were analyzed in binary logistic regression analyses with scores from the *CIRCLE* Rapid Vocabulary Naming (RVN). Fifty-two participants were proficient in vocabulary skills (naming pictures), while 38 participants were not proficient. Data were not available for 7 participants (see Figure 8). *CIRCLE* RVN scores for 90 participants were used for data analyses. The hypothesis being tested is:

H_0: A relationship does not exist between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RVN.

H_1: A relationship exists between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RVN.

Based on a *p*-value of 0.286 for the physical elements, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RVN. Based on a *p*-value of 0.216 for the social elements, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* RVN. Results of the data analyses revealed no significant relationships between the materials, opportunities, activities, and interactions measured with the *ECERS-R* in quality preschool environments with children's vocabulary knowledge demonstrated in the beginning of kindergarten. Table 34 summarizes results of the binary logistic regression analyses.

Table 34

Deviance Table for ECERS-R Physical and Social Elements and CIRCLE Rapid Vocabulary Naming (RVN)

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	2	1.788	0.8940	1.79	0.409
ECERS-R (Physical elements)	1	1.138	1.1383	1.14	0.286
ECERS-R (Social elements)	1	1.528	1.5283	1.53	0.216
Error	87	120.792	1.3884		
Total	89	122.580			

Note. Adj Dev = Adjusted Deviance.

ELLCO Pre-K with CIRCLE Rapid Vocabulary Naming (RVN). Physical elements of process quality from the *ELLCO Pre-K* were analyzed in a binary logistic regression analysis with scores from the *CIRCLE* Rapid Vocabulary Naming (RVN). Fifty-two participants were proficient in vocabulary skills (naming pictures), while 38 participants were not proficient. Data were not available for 7 participants (see Figure 8). *CIRCLE* RVN scores for 90 participants were used for data analysis. The hypothesis being tested is:

H_0: A relationship does not exist between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* RVN.

H_1: A relationship exists between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* RVN.

Based on a *p*-value of 0.540, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* RVN. Results of the data analysis revealed no significant relationship between the materials and opportunities measured with the *ELLCO Pre-K* in quality preschool environments with children's vocabulary knowledge demonstrated in the beginning of kindergarten. Table 35 summarizes results of the binary logistic regression analysis.

Table 35

Deviance Table for ELLCO Pre-K Physical Elements and CIRCLE Rapid Vocabulary Naming (RVN)

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	1	0.376	0.3758	0.38	0.540
ELLCO Pre-K (Physical elements)	1	0.376	0.3758	0.38	0.540
Error	88	122.204	1.3887		
Total	89	122.580			

Note. Adj Dev = Adjusted Deviance.

ECERS-R with CIRCLE PA Composite. Physical and social elements of process quality from the *ECERS-R* were analyzed in binary logistic regression analyses with *CIRCLE* PA Composite scores. Seventy-five participants were proficient with various phonological awareness tasks, while 15 participants were not proficient. Data were not available for 7 participants (see Figure 9). *CIRCLE* PA Composite scores for 90 participants were used for data analyses. The hypothesis being tested is:

H_0: A relationship does not exist between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* PA Composite.

H_1: A relationship exists between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* PA Composite.

Based on a *p*-value of 0.977 for physical elements, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* PA Composite. Based on a *p*-value of 0.537 for social elements, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the social elements of process quality from the *ECERS-R* and children's performance on the *CIRCLE* PA Composite. Results of the data analyses revealed no significant relationships between the materials, opportunities, activities, and interactions measured with the *ECERS-R* in quality preschool environments with children's knowledge of various phonological awareness tasks demonstrated in the beginning of kindergarten. Table 36 summarizes results of the binary logistic regression analyses.

Table 36

Deviance Table for ECERS-R Physical and Social Elements and CIRCLE PA Composite

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	2	0.5222	0.261107	0.52	0.770
ECERS- R (Physical elements)	1	0.0008	0.000812	0.00	0.977
ECERS-R (Social elements)	1	0.3812	0.381216	0.38	0.537
Error	87	80.5788	0.926193		
Total	89	81.1010			

Note. Adj Dev = Adjusted Deviance.

ELLCO Pre-K with CIRCLE PA Composite. Physical elements of process quality from the *ELLCO Pre-K* were analyzed in a binary logistic regression analysis with *CIRCLE* PA Composite scores. Seventy-five participants were proficient with various phonological awareness tasks, while 15 participants were not proficient. Data were not available for 7 participants (see Figure 9). *CIRCLE* PA Composite scores for 90 participants were used for data analysis. The hypothesis being tested is:

H_0: A relationship does not exist between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* PA Composite.

H_1: A relationship exists between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* PA Composite.

Based on a *p*-value of 0.695, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *CIRCLE* PA Composite. Results of the data analysis revealed no significant relationships between the materials and opportunities measured with the *ELLCO Pre-K* in quality preschool environments with children's knowledge of various phonological awareness tasks demonstrated in the beginning of kindergarten. Table 37 summarizes results of the binary logistic regression analysis.

Table 37

Deviance Table for ELLCO Pre-K Physical Elements and CIRCLE PA Composite

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	1	0.1535	0.1535	0.15	0.695
ELLCO Pre-K (Physical elements)	1	0.1535	0.1535	0.15	0.695
Error	88	80.9475	0.9199		
Total	89	81.1010			

Note. Adj Dev = Adjusted Deviance.

ECERS-R with DIBELS Next. Physical and social elements of process quality from the *ECERS-R* were analyzed in binary logistic regression analyses with *DIBELS Next* Composite Scores. Fifty-eight participants were At or Above Benchmark with identifying letters and beginning phonemes, while 36 participants were Below Benchmark. Data were not available for 3 participants (see Figure 10). *DIBELS Next* Composite Scores for 94 participants were used for data analyses. The hypothesis being tested is:

H_0: A relationship does not exist between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *DIBELS Next*.

H_1: A relationship exists between the physical and social elements of process quality from the *ECERS-R* and children's performance on the *DIBELS Next*.

Based on a *p*-value of 0.934 for physical elements, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements

of process quality from the *ECERS-R* and children's performance on the *DIBELS Next*. Based on a *p*-value of 0.310 for social elements, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the social elements of process quality from the *ECERS-R* and children's performance on the *DIBELS Next*. Results of the data analyses revealed no significant relationships between the materials, opportunities, activities, and interactions measured with the *ECERS-R* in quality preschool environments with children's knowledge of letters and beginning phonemes demonstrated in the beginning of kindergarten. Table 38 summarizes results of the binary logistic regression analyses.

Table 38

Deviance Table for ECERS-R Physical and Social Elements and DIBELS Next

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	2	1.533	0.76649	1.53	0.465
ECERS-R (Physical elements)	1	0.007	0.00685	0.01	0.934
ECERS-R (Social elements)	1	1.032	1.03185	1.03	0.310
Error	91	123.582	1.35804		
Total	93	125.115			

Note. Adj Dev = Adjusted Deviance.

ELLCO Pre-K with DIBELS Next. Physical elements of process quality from the *ELLCO Pre-K* were analyzed in a binary logistic regression analysis with *DIBELS Next* Composite Scores. Fifty-eight participants were At or Above Benchmark with

identifying letters and beginning phonemes, while 36 participants were Below Benchmark. Data were not available for 3 participants (see Figure 10). *DIBELS Next* Composite Scores for 94 participants were used for data analysis. The hypothesis being tested is:

H_0: A relationship does not exist between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *DIBELS Next*.

H_1: A relationship exists between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *DIBELS Next*.

Based on a *p*-value of 0.048, the researcher rejected the null hypothesis. A significant relationship existed between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *DIBELS Next*. Materials and opportunities related to language and early literacy as measured with the *ELLCO Pre-K* in quality preschool environments was found to have a positive effect on children's knowledge of letters and beginning phonemes demonstrated in the beginning of kindergarten. Table 39 summarizes results of the binary logistic regression analysis.

Table 39

Deviance Table for ELLCO Pre-K Physical Elements and DIBELS Next

Source	*df*	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	1	3.914	3.914	3.91	0.048
ELLCO Pre-K (Physical elements)	1	3.914	3.914	3.91	0.048*
Error	92	121.200	1.317		
Total	93	125.115			

Note. Adj Dev = Adjusted Deviance.
*p (two-tailed) < α = .05 (significantly correlated).

Figure 13 shows the probability of a child receiving a 1 (At or Above Benchmark) on the *DIBELS Next* at a particular *ELLCO Pre-K* quality rating score. For example, with an *ELLCO Pre-K* quality rating score of 3.5, the probability of a child scoring a 1 on the *DIBELS Next* is around 0.9. Whereas, an *ELLCO Pre-K* quality rating score of 4.5 resulted in a lower probability of around 0.55 that a child would score a 1 on the *DIBELS Next*. Results of the data were counter intuitive to what the researcher would hope to have as results: the higher the ELLCO Pre-K quality rating score, the higher the probability that a child would score a 1 on the *DIBELS Next*.

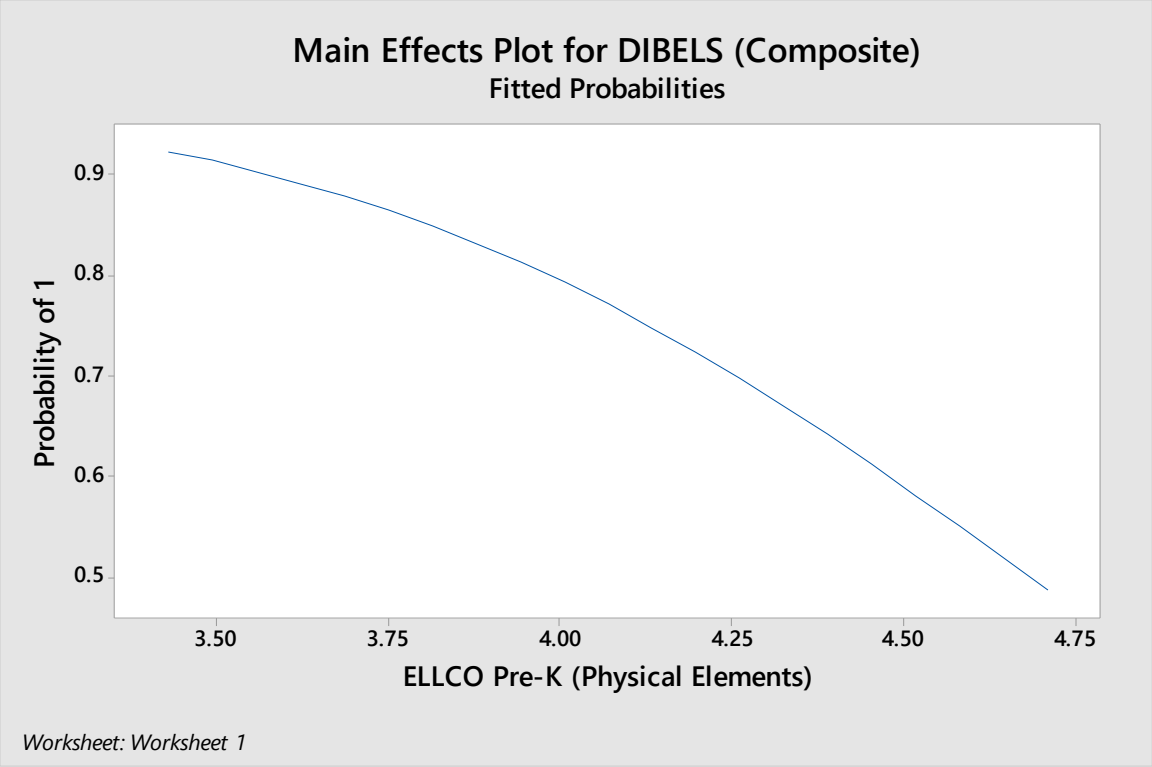

Figure 13. Main effects plot for DIBELS Next with ELLCO Pre-K physical elements of quality.

Results for research question 1. To answer the first research question, several binary logistic regression analyses were conducted. Little evidence from the quality of preschool environments was found to influence children's pre-reading performance in the beginning of kindergarten. The only area of significance was found with the physical elements of process quality from the *ELLCO Pre-K* observation tool and children's performance on the *DIBELS Next.* Children who performed At or Above Benchmark with identifying letters and beginning phonemes on the *DIBELS Next* experienced quality physical elements within their preschool environments. Indicators categorized as quality physical elements from observations using the *ELLCO Pre-K* included *Organization of the classroom*, *Contents of the classroom*, *Opportunities for child choice and initiative*, *Organization of the book area*, *Characteristics of book*, and *Books for learning*. As a

result of the findings, quality materials and opportunities were provided that actively facilitated children's learning, which included the use of books by children or with teacher guidance that had meaningful purposes.

In addition to analyzing data to determine whether a relationship existed between the physical and social elements of process quality in a preschool's language and early literacy environment with children's pre-reading performance in the beginning of kindergarten, the researcher examined data related to children's writing performance in the beginning of kindergarten to answer the second research question.

Research Question 2

What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on the measure of children's writing performance in the beginning of kindergarten?

Binary logistic regression analyses were conducted with the independent variables of process quality categories from the *ECERS-R* and *ELLCO Pre-K* and the dependent variable of writing assessment scores.

Data for analysis. The researcher utilized the average rating scores obtained from observation data collected from each participating preschool (see Table 31). As with the first research question, social elements of process quality from the *ELLCO Pre-K* could not be estimated and were removed from regression analyses due to a lack of variance amongst data. The following data sources were adequate for use in regression analyses for the purpose of answering Research Question 2: physical and social elements of process quality from the *ECERS-R*, physical elements of process quality from the *ELLCO Pre-K*, and scores from the *Conventions of Writing Developmental Scale*.

ECERS-R and ELLCO Pre-K with Conventions of Writing Developmental Scale. Both independent and dependent variables were analyzed in binary logistic regression analyses. Thirty-two participants were Mastering their writing abilities, 45 participants were Developing their writing skills, while no participants were Exploring their writing skills. Data were not available for 20 participants (see Figure 12). *Conventions of Writing Developmental Scale* scores for 77 participants were used for data analyses. The hypothesis being tested is:

H_0: A relationship does not exist between the physical and social elements of process quality from the *ECERS-R* and *ELLCO Pre-K* and children's performance on the *Conventions of Writing Developmental Scale*.

H_1: A relationship exists between the physical and social elements of process quality from the *ECERS-R* and *ELLCO Pre-K* and children's performance on the *Conventions of Writing Developmental Scale*.

Based on a *p*-value of 0.514 for the physical elements from the *ECERS-R*, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ECERS-R* and children's performance on the *Conventions of Writing Developmental Scale*. Based on a *p*-value of 0.983 for the social elements from the *ECERS-R*, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the social elements of process quality from the *ECERS-R* and children's performance on the *Conventions of Writing Developmental Scale*. Based on a *p*-value of 0.184 for the physical elements from the *ELLCO Pre-K*, the researcher failed to reject the null hypothesis. A non-significant relationship existed between the physical elements of process quality from the *ELLCO*

Pre-K and children's performance on the *Conventions of Writing Developmental Scale*. Results of the data analyses revealed no significant relationships between the materials, opportunities, activities, and interactions provided in quality preschool environments with children's writing abilities demonstrated in the beginning of kindergarten. While the *p*-values indicated that none of three predictors had much of an effect on the *Conventions of Writing Developmental Scale* scores, the physical elements from the *ELLCO Pre-K* seemed to have the most.

Deviance table. Table 40 summarizes results of binary logistic regression analyses involving the *Conventions of Writing Developmental Scale*.

Table 40

Deviance Table for ECERS-R and ELLCO Pre-K Elements of Quality and the Conventions of Writing Developmental Scale

Source	*df*	Seq Dev	Contribution	Adj Dev	Adj Mean	Chi-Square	*p*-value
Regression	3	2.002	1.92%	2.002	0.66743	2.00	0.572
ECERS-R (Physical elements)	1	0.040	0.04%	0.425	0.42494	0.42	0.514
ECERS-R (Social elements)	1	0.000	0.00%	0.000	0.00044	0.00	0.983
ELLCO Pre-K (Physical Elements)	1	1.962	1.88%	1.766	1.76596	1.77	0.184
Error	73	102.537	98.08%	102.537	1.40462		
Total	76	104.539	100.00%				

Note. Seq Dev = Sequential Deviance. Adj Dev = Adjusted Deviance.

Model summary. Table 41 presents a Model Summary for the proportion of variation in the dependent variables explained by the independent variables (predictors). Deviance R-Squared is the proportion of the deviance/change in the data that the model explains. The higher the Deviance R-Squared, the better the model fits the data. Based on the results, none of the predictors (elements of quality) had much of an effect on a child's writing performance.

Table 41

Model Summary

Deviance R-Sq	Deviance R-Sq (adj)	AIC
1.92%	0.00%	110.54

Note. AIC = Akaike Information Criterion.

Coefficients. Table 42 presents coefficients and additional data that explain the odds of a child scoring a 1 (Developing) on the *Conventions of Writing Developmental Scale*. A positive coefficient of 0.66 indicates that a child who is associated with a higher ECERS-R (physical elements) quality rating score is more likely to score a 1 on the *Conventions of Writing Developmental Scale*. The Variance Inflation Factor (VIF) measures to some degree the uncertainty around that particular coefficient estimate. Based on the high *p*-values and modest coefficients (all confidence intervals contain 0), the predictors did not have a significant effect on the response.

Table 42

Coefficients

Term	Coef	*SE* Coef	95% CI	*z*-value	*p*-value	VIF
Constant	2.13	6.37	(-10.35, 14.61)	0.33	0.738	
ECERS-R (Physical elements)	0.66	1.02	(-1.33, 2.65)	0.65	0.516	2.02
ECERS-R (Social elements)	-0.021	0.990	(-1.961, 1.919)	-0.02	0.983	1.62
ELLCO Pre-K (Physical elements)	-1.44	1.12	(-3.64, 0.75)	-1.29	0.197	1.43

Note. VIF = Variance Inflation Factor.

Odds ratios. Table 43 provides odds ratios for continuous predictors. The odds ratio is equal to 1 when no association exists. The odds of a child having a score of 2 (Mastering) on the *Conventions of Writing Developmental Scale* increases by 1.9360 if the value of the *ECERS-R* quality rating for physical elements increased by 1. The odds of a child having a score of 2 on the *Conventions of Writing Developmental Scale* increases by 0.9795 if the value of the *ECERS-R* quality rating for social elements increased by 1. The odds of a child having a score of 2 on the *Conventions of Writing Developmental Scale* increases by 0.2362 if the value of the *ELLCO Pre-K* quality rating for physical elements increased by 1.

Table 43

Odds Ratios for Continuous Predictors

	Odds Ratio	95% CI
ECERS-R (Physical elements)	1.9360	(0.2636, 14.2182)
ECERS-R (Social elements)	0.9795	(0.1408, 6.8153)
ELLCO Pre-K (Physical elements)	0.2362	(0.0264, 2.1167)

Regression equation. The following regression equation was used to predict the probability that a child scores a 2 (Mastering), based on the *ECERS-R* and *ELLCO Pre-K* models and children's scores on the *Conventions of Writing Developmental Scale*. Coefficient values used in the equation were determined in Table 42. Since the models were not a great fit, there's a lot of uncertainty around this prediction.

$$P(2) = \exp(Y') / (1 + \exp(Y'))$$

$$Y' = 2.13 + 0.66 \text{ ECERS-R (Physical elements)} - 1.44 \text{ ELLCO Pre-K (Physical elements)} - 0.021 \text{ ECERS-R (Social elements)}$$

Results for research question 2. To answer the second research question, binary logistic regression analyses were conducted. No significant relationships were found between quality preschool environments and children's writing performance in the beginning of kindergarten. To determine if any other factors, such as a child's entry age to kindergarten, gender, race, or socioeconomic status have an effect on their pre-reading or writing performance in the beginning of kindergarten, the researcher sought to answer the third research question.

Research Question 3

What other factors influence children's pre-reading and writing performance in the beginning of kindergarten, i.e., entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff?

Binary logistic regression analyses were conducted with the independent variables of entry age to kindergarten, gender, race, and socioeconomic status (SES) and the dependent variables of children's pre-reading and writing assessment scores.

Data for analysis. Analyses were not conducted with the educational attainment of preschool staff due to turnover of staff in some preschools and the unknown connection of staff to particular children, which would have helped determine any effects on their academic performance. As with the first research question, *Concepts About Print* data were removed from regression analyses due to a lack of variance amongst data. Reporting children's race in four groups (see Figure 5) resulted in too little data for most of the variables. So, the researcher combined data to create two groups for analyses: White/Caucasian (code = 1) and Other (code = 0). All other data were appropriate for use in binary logistic regression analyses for the purpose of answering Research Question 3.

Analyzing demographic data with pre-reading and writing assessment scores. Table 44 summarizes whether any significant relationships existed between the independent and dependent variables. Based on the *p*-value for each predictor's effect on the response, significant effects were found with entry age to kindergarten and the *CIRCLE* PA Composite, gender and *CIRCLE* RLN, in addition to, gender and *DIBELS Next*. Children age 5 years 7 months and older upon entry to kindergarten performed

better than children age 5 years through 5 years 6 months on various phonological awareness tasks. When gender was identified as having a significant relationship, results were specific to females. Females were found to perform better than males on the *CIRCLE* RLN, which assessed children's accuracy of naming uppercase and lowercase letters in one minute. Females were also found to perform better than males on the *DIBELS Next*, which assessed children's knowledge of both letters and beginning phonemes.

Table 44

Effect of Student Demographic Data on Academic Performance

Assessment	CIRCLE RLN	CIRCLE RVN	CIRCLE PA Composite	DIBELS Next	CWDS
Predictor					
Entry age to kindergarten	0.453	0.224	0.055*	0.309	0.990
Gender	0.041*	0.134	0.775	0.015*	0.888
Race	0.673	0.203	0.179	0.627	0.122
SES	0.924	0.087	0.486	0.682	0.321

Note. CWDS = Conventions of Writing Developmental Scale. SES = Socioeconomic status.
*p (two-tailed) < α = .05 (significantly correlated).

Significant findings. Figure 14, Figure 15, and Figure 16 illustrate the main effects plot for each significant finding. Results of Figure 14 show that children age 5 years 7 months and older upon entry to kindergarten (code = 1) were more likely to score a 1 (Proficient) on the *CIRCLE* PA Composite. *CIRCLE* PA Composite consists of various phonological awareness skills, which include the ability to discriminate sounds at

the beginning and end of words, identify and recall rhyming words, indicate the number of words in a sentence, clap syllables in a word, and blend parts of a given word. Results of Figure 15 show that females (code = 0) were more likely to score a 1 (Proficient) on the *CIRCLE* RLN. Results of Figure 16 show that females (code = 0) were more likely to score a 1 (At or Above Benchmark) on the *DIBELS Next*.

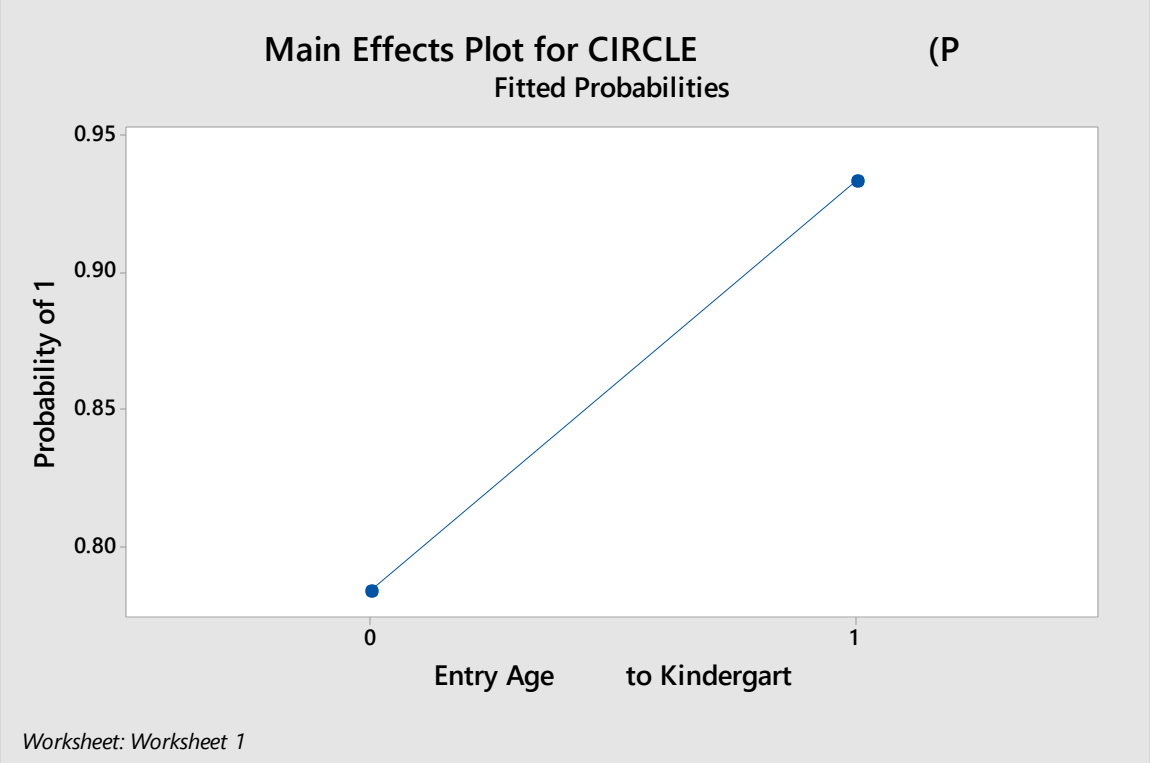

Figure 14. Main effects plot for CIRCLE PA Composite with entry age to kindergarten.

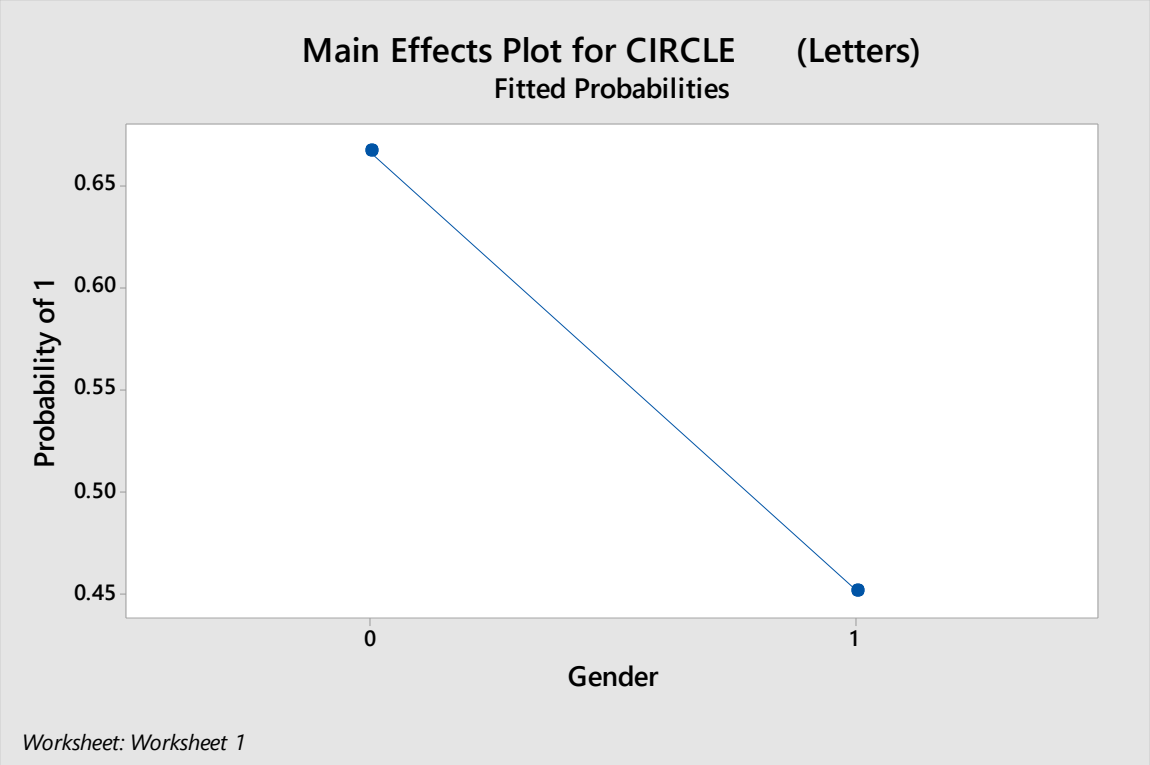

Figure 15. Main effects plot for CIRCLE Rapid Letter Naming (RLN) with gender.

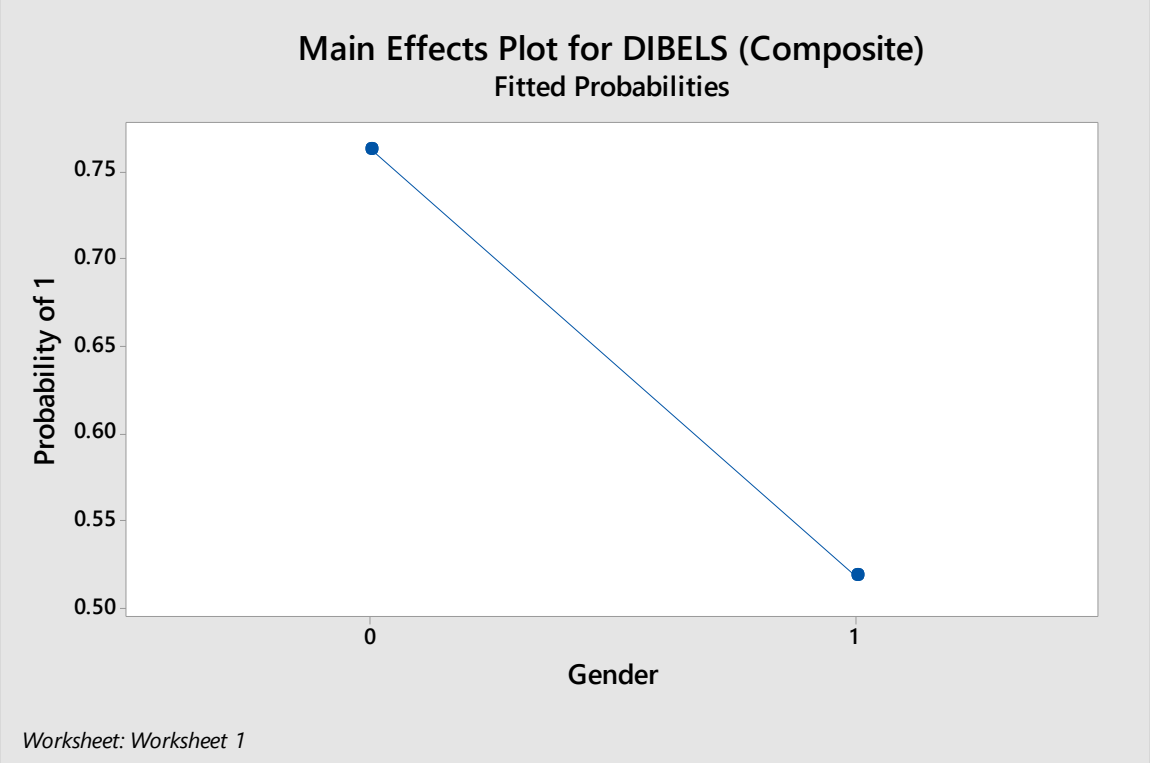

Figure 16. Main effects plot for DIBELS Next with gender.

Chapter Summary

This chapter provided a description of all data collected and thorough analyses to subsequently answer each research question. Results of this correlational study found a few important findings. A significant relationship existed between the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *DIBELS Next*. Materials and opportunities related to language and early literacy as measured with the *ELLCO Pre-K* in quality preschool environments was found to have a positive effect on children's knowledge of letters and beginning phonemes demonstrated with *DIBELS Next* results in the beginning of kindergarten. A significant relationship existed with entry age to kindergarten and the *CIRCLE* PA Composite. Results found children age 5 years 7 months and older upon entry to kindergarten performing better than children age 5 years through 5 years 6 months on various phonological awareness tasks. A significant relationship existed with gender and performance on the *CIRCLE* RLN. Results found females to perform better than males on the *CIRCLE* RLN, which assessed children's accuracy of naming uppercase and lowercase letters in one minute. A significant relationship also existed with gender and performance on the *DIBELS Next*. Results found females to perform better than males on the *DIBELS Next*, which assessed children's knowledge of letter identification and beginning phonemes given one minute for each skill.

A summary of these findings in relation to prior research is further discussed in chapter five. The implications of these findings for preschools, parents of young children, and kindergarten teachers will be presented. Recommendations will be made

for future research that will expand upon quality learning experiences focusing on developmentally appropriate language and early literacy practices.

CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Children enter kindergarten with a variety of skills that lay the foundation for future learning and development. Children's cognitive, social, and emotional skills are developed through a variety of experiences and interactions with others. Preschools play an important role in developing these skills to prepare children for kindergarten and the culture of schooling. Preschools, like those participating in Keystone STARS, strive to provide positive outcomes for children.

Developing children's cognitive skills is crucial when preparing children for a smooth transition to kindergarten and for later literacy achievement. To be successful readers and writers, children require a strong foundation of the alphabetic principle as a basic understanding of reading and writing and how print works. Children should be immersed in language development and have opportunities to practice what they learn. Connections between oral and written language at an early age is invaluable to their early literacy development.

To better understand kindergarten readiness skills and how to support children's language and early literacy development, quality preschool environments were examined. Specific attention was placed on the development of children's language and early literacy skills. The purpose of this correlational research study was to identify the process quality factors within a preschool's language and early literacy environment and the influence these factors had on children's pre-reading and writing performance in the beginning of kindergarten. Process quality referred to the physical and social elements that provided children with materials, opportunities, interactions, and activities to develop

their early literacy skills. Results from this study related to the findings presented in the literature. The researcher examined the following research questions:

1. What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on measures of children's pre-reading performance in the beginning of kindergarten?

2. What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on the measure of children's writing performance in the beginning of kindergarten?

3. What other factors influence children's pre-reading and writing performance in the beginning of kindergarten, i.e., entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff?

Quantitative and qualitative data were gathered to examine if relationships existed between children's preschool experiences and early literacy skills demonstrated in the beginning of kindergarten. Participants selected for this study included four STAR 4 preschools and 97 children who were enrolled in kindergarten during the 2014-2015 school year in a rural school district in northeast Pennsylvania. The quantitative data included rating scores based on two observation instruments measuring the quality of preschools' language and early literacy environments. Additional quantitative data was collected from children's pre-reading and writing results from four kindergarten assessment instruments. Qualitative data were collected by the researcher in the form of preschool observation notes pertaining to indicators related to language and early literacy from each observation tool. Qualitative data was also collected from survey information provided by each participating preschool. Data were analyzed with the quantitative and

qualitative data gathered. Contents of this chapter include a summary of the findings, including an analysis of each research question, implications of the findings, and recommendations for future research.

Summary of the Findings

Children are provided a variety of experiences related to language and early literacy within preschool environments. To examine the quality of these experiences, the researcher collected rating scores and evidence to support these ratings from two observation tools, the *Early Childhood Environment Rating Scale – Revised Edition* (*ECERS-R*) and the *Early Language & Literacy Classroom Observation Tool* (*ELLCO Pre-K*). An in-depth analysis was conducted with the physical and social elements of process quality from each observation tool and their associated quality rating scores.

ECERS-R Elements of Quality in Preschools

Results of the *ECERS-R* quality rating scores obtained from OCDEL found strengths and weaknesses for the four preschools studied as it pertained to language and early literacy development. Knowing that all four preschools selected for participation were rated STAR 4, high quality experiences were expected. However, variations existed in the quality ratings of physical and social elements that promoted children's early literacy growth.

While a rating score of 5 or higher was considered *goo*d to *excellent* quality, Preschool 1 received the lowest average *ECERS-R* rating scores (physical elements 5.48, social elements 5.31) when compared to other preschools (Preschool 4: physical elements 6.43, Preschool 2: social elements 6.43). These findings suggest that Preschool

1 has room for improvement if the quality of its language and early literacy environment is to be comparable to other STAR 4 preschools.

A strength with the *ECERS-R* data collected for all four preschools found high quality rating scores with the following indicators related to language and early literacy: (a) *Encouraging children to communicate*, (b) *Informal use of language*, (c) *Staff-child interactions*, and (d) *Interactions among children*. A study conducted by Whitehurst and Lonigan (1998) found that frequent adult-child conversations highly supported early literacy development.

On the other hand, evidence collected in the form of *ECERS-R* observation notes showed that staff interacted with children often through conversations involving a basic exchange of information. Questions were posed that required a simple recall answer. Evidence was missing from two out of four preschools and their quality rating scores related to *Using language to develop reasoning skills*. Children should be encouraged by staff to use their imagination and demonstrate abstract thinking during play or other activities. To increase *ECERS-R* quality rating scores, preschools need to extend children's thinking to a higher level. Teachers' ability to intentionally ask questions that promote a higher level of thinking requires practice. Staff may not know the type of questions to ask due to a lack of training or experience.

Another weakness with preschools' quality rating scores on the *ECERS-R* pertained to transition times. Three out of four preschools scored less than 5, because of the need for structured transition periods in their schedule. OCDEL recommended that preschools have staff sing songs or play language games to engage children between activities in order to minimize wait times. Every minute spent with children is an

opportunity to further develop their early literacy skills. Teachers need to make a conscientious effort to engage children in language-based learning activities throughout every aspect of their day.

ELLCO Pre-K Elements of Quality in Preschools

Quality rating scores from elements of process quality with the *ELLCO Pre-K* also showed strengths and weaknesses. All four preschools scored high quality ratings with *Efforts to build vocabulary*. As Roskos and Burnstein (2011) reported, targeting vocabulary instruction does produce gains in preschoolers' receptive and expressive vocabulary. Additionally, three out of four preschools obtained high quality rating scores with the following *ELLCO Pre-K* indicators: (a) *Opportunities for extended conversations*, (b) *Books for learning*, and (c) *Approaches to book reading*. Books were either used independently for enjoyment, with guidance, or as a structured activity. Shared book reading is known in research as an important activity supporting early literacy development (Whitehurst & Lonigan, 1998). When observing shared reading time, the researcher found teachers focusing on comprehension through class discussions, expanding vocabulary and meanings, and building children's background knowledge.

When examining the specific categories of process quality, the researcher obtained lower quality rating scores for social elements than physical elements in all four preschools. Only two out of four preschools had quality rating scores for *Phonological Awareness*. Those preschools who did promote phonological awareness practiced identifying letters and their sounds and applied those sounds to the beginning, middle, and end of words. Low quality rating scores were also obtained for elements related to *Early writing environment*. The researcher found little integration of writing throughout

the preschool environment and little motivation to engage children in writing for meaningful purposes.

The quality rating scores obtained from the researcher's observations with the *ELLCO Pre-K* signify the need for preschools to improve the quality of their activities and early writing environments. Connecting children's spoken communication with written language is needed to help children understand that print has meaning and aids with communication efforts. Without print awareness, children will struggle with the ability to read and understand text.

Differences in Quality

After closely evaluating the quality rating scores obtained from each observation tool, an unexpected variance of quality existed for STAR 4 preschools. Possible explanations are provided about the differences found in quality ratings. One possibility may be due to the manner in which results were analyzed. The researcher's focus with using each tool was very specific. Data were examined specific to categories of physical and social elements of process quality related to language and early literacy. Data could be analyzed differently, either as a whole or as smaller subscales designed by the authors of each tool to determine whether STAR 4 preschools are more closely related with their quality rating scores.

Results from the *ECERS-R* had higher quality rating scores than those obtained from the *ELLCO Pre-K*. Preschools often tailor the structure of their environments and practices based on a set of expectations. Keystone STARS provided that framework with standards of quality and results from observations conducted using the *ECERS-R*. While the *ECERS-R* included indicators supporting children's language development, very little

focused on print and early writing. The researcher introduced a newer observation tool specific to language and early literacy, the *ELLCO Pre-K,* as a means as collecting data about the quality of preschool environments. Preschools were not familiar with the *ELLCO Pre-K* tool prior to the researcher's observations. The preschool environments observed were not as specific as the expectations described in the *ELLCO Pre-K* for building children's language and early literacy skills. The *ECERS-R* is a well known quality rating tool for preschool environments, but it is not the only one. Preschools should consider learning about other observation instruments to expand their knowledge about quality approaches to developing children's readiness skills.

Developmentally Appropriate Activities and Learning Through Play

Preschools' efforts to build children's early literacy skills were found by the researcher to be mostly developmentally appropriate. Play is a developmentally appropriate activity that continues to be an active means for children to develop their cognitive, social, and emotional skills in preschool environments. Not only do children learn as they play, children learn how to learn. The researcher noted adequate time in each preschool's schedule for play. Children were provided opportunities to use materials and interact with others to develop language and explore with early literacy skills. In a study conducted by Levy (1986), play experiences were found to increase children's level of language performance.

During the observations, adults often engaged children in conversations and facilitated learning new information. The following developmentally appropriate activities were conducted with preschool children: (a) *recognizing the number 7 and counting seven items*, (b) *identifying the letter W and its sound*, (c) *locating words that*

began with the letter W, and (d) *learning the vocabulary work pink*. Some of the activities observed by the researcher involved *worksheets teaching the concepts in and out, classifying objects that were small, medium, and big and the concepts of more and less*. Children in a large group setting were also observed participating in a *drill practice with letter cards and their sounds*. Missing from the one time observation in each preschool, however, was evidence that spoken language led to written language during play. Any connections to print occurred during book reading, completion of worksheets, or pre-made charts for whole group activities, like a Morning Message or words to a song.

Evidence collected from the *Response Survey for Participating Preschools* noted at least one research-based curriculum used as a resource for providing developmentally appropriate materials and activities to children. Having a developmentally appropriate curriculum is important as it provides lots of group activities, open-ended play, and opportunities for frequent, positive interactions and communication that result in higher process quality in preschool environments (Õun, 2009).

As a Keystone STAR 4 preschool, the curriculum had to be cross-walked to the PA Learning Standards to ensure approaches to learning were developmentally appropriate. Example behaviors and activities that were observed as they related to the PA Learning Standards are listed in Table 45 (https://www.pakeys.org/pages/get.aspx?page=career_standards).

Table 45

Example PA Learning Standards for Pre-Kindergarten

Key Learning Area	Standard Area	Strand	Standard
Approaches to Learning through Play	AL.3 Applying Knowledge	Representation	AL.3 PK.C Use materials and objects to represent new concepts.
Language and Literacy Development	1.1 Foundational Skills	Phonics and Word Recognition	1.1 PK.D Develop beginning phonics and word skills.
Language and Literacy Development	1.2 Reading Informational Text	Vocabulary Acquisition and Use	1.2 PK.J Use new vocabulary and phrases acquired in conversations and being read to.
Language and Literacy Development	1.4 Writing	Informative/ Explanatory - Conventions of Language	1.4 PK.F *Emerging to…* Spell simple words phonetically.
Social and Emotional Development	16.2 Establishing and Maintaining Relationships	Communication	16.2 PK.C Engage in reciprocal communication with adult and peers.

Vygotsky's theory was used as the framework for this study as it emphasized learning preceding development. The role of preschools is to facilitate or mediate children's learning so the development of specific cognitive, social, and emotional skills can occur. There was evidence of mediation throughout the preschool observations with

the use of materials and interactions with others. Books were deliberately selected to structure children's participation and interactions with peers. Adults often mediated language development by asking questions and extending conversations. Children used their creativity and imagination to build, create art, and participate in sociodramatic play. For example, *a child used blocks to build a tower. It fell down. The teacher asked how else the tower could have been built to make it sturdy. The teacher followed-up with asking how many blocks it took to build the tower.* Another example included *a child placing a block over the entrance to a block tunnel. The teacher asked if it was broke. The child pretended to fix it with other blocks that were used like a saw and hammer. The teacher engaged the child in a discussion about driving through a tunnel.* This example demonstrated how the teacher provided guidance in a Zone of Proximal Development to make a connection to what the child already knew and interacted in a way that advanced learning. Various examples of self-regulation were also evident during the researcher's observations. Children listened to stories, followed directions, practiced sharing and taking turns, and problem solved with others.

Based on observation data collected by the researcher, the type of activities present in preschools varied with a mix of both developmentally appropriate and less favorable approaches to learning depending on the preschool. If the researcher had conducted more than one observation in each preschool, the results could have been different.

The qualitative data gathered in the form of observation notes and survey responses identified preschools' resources for developmentally appropriate practices and explained how preschool children were learning whether through play or other

opportunities and experiences provided. The quantitative information gathered from the *ECERS-R* and *ELLCO Pre-K* was used in data analyses to answer this study's research questions pertaining to elements of process quality in a preschool's language and early literacy environment and children's demonstrated early literacy skills.

Elements of Process Quality and Children's Pre-Reading Performance

Research Question 1: What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on measures of children's pre-reading performance in the beginning of kindergarten?

Quantitative data were collected in the form of average rating scores from physical and social elements of process quality from the *ECERS-R* and *ELLCO Pre-K* observation tools and analyzed with pre-reading assessment scores from the *CIRCLE* RLN, *CIRCLE* RVN, *CIRCLE* PA Composite, and *DIBELS Next*.

Results of the data collected and analyzed revealed a significant relationship with the physical elements of process quality from the *ELLCO Pre-K* and children's performance on the *DIBELS Next*. Physical elements referred to the materials and opportunities afforded to children in preschool environments that promoted language and early literacy development. The contents and activities provided in the classroom, including books for learning, were found to promote the pre-reading skill of identifying letters and beginning phonemes as assessed by *DIBELS Next*. For example, *children were observed tracing the letter W or writing the letters K and L while having discussions with the teacher about letter sounds and words that began with those letter sounds.* Teachers made an effort to *differentiate uppercase and lowercase letters through discussions about names of people and holidays*. Children may have *participated at a computer center*

practicing letters, sounds, and words. A *Morning Message* was used in some preschool environments to promote print and serve as a tool to teach phonological awareness skills. Some of the preschools had a structured time for reading a book to the class, while other preschools had teachers support children during their independent book choice times.

The physical elements of process quality had an effect on children's pre-reading performance with only one assessment, the *DIBELS Next*. No significant relationship existed with the *CIRCLE* RLN, which also assessed alphabet knowledge. Results could be attributed to the timing of when each assessment was administered. The *CIRCLE* RLN was administered during the kindergarten screening process in the spring, while the *DIBELS Next* was administered in the fall of children's kindergarten year. With almost a six month difference, children had more time to acquire alphabet knowledge. Parents may have chosen to keep their children enrolled in preschool until the start of kindergarten. This choice would have provided extended time for children in quality preschool environments, which are already immersed in a school culture.

Although no significant relationship existed with preschool environments and children's performance on the *CIRCLE* RVN, it is important to note that four out of four preschools scored high quality ratings on the *ELLCO Pre-K* with *Efforts to build vocabulary*. Fifty-two percent of kindergarten children scored proficient with vocabulary skills when pictures were presented to them. Findings revealed that children were being exposed to opportunities to build vocabulary in quality preschool environments whether it occurred through interactions or through activities that promoted language development.

When examining scores from the *CIRCLE* assessment, specifically the PA Composite, children performed very well. Seventy-five children, or 77.32%, were proficient during the kindergarten screening process with seven various phonological awareness skills. Yet, there were no significant relationships found with elements of process quality from preschools' language and early literacy environments. Only two out of four preschools had quality ratings on the *ELLCO Pre-K* with the *Phonological Awareness* indicator.

Analyses conducted to answer Research Question 1 did not include social elements of process quality from the *ELLCO Pre-K* due to a lack of variance amongst quality rating scores. The value of three preschools' *ELLCO Pre-K* average rating score for social elements of process quality was 4.08, while one preschool's average rating score was 3.00. Only three children attended that preschool.

Results from children's performance on *Concepts About Print* tasks were also removed from any data analyses due to a lack of variance amongst scores. Only four kindergarten children from three different preschools Met Expectations with *CAP* tasks. *CAP* tasks measured children's awareness of how print works. Learning how print works would best be evident during shared book reading. Teachers are able to model how to hold a book properly, point left to right when reading, demonstrate one-to-one correspondence, count the number of words on a page, use beginning sounds, identify a word, decode words, and read sight words. While children did not perform well with *CAP* tasks, findings did report that three out of four preschools scored high quality ratings on the *ELLCO Pre-K* with *Books for learning* and *Approaches to book reading*. During the preschool observations, the researcher did not find evidence that *CAP* tasks

were explicitly taught. When teachers read a book to children in a large group setting, the focus was on comprehension and contributions to the story through class discussions to build background knowledge. Teachers also stressed vocabulary building with new meanings. When books were used by individual children or in small groups with teacher guidance, the purpose was more for enjoyment or to practice basic academic skills like counting pictures or identifying colors.

Overall, the data analyzed to answer Research Question 1 were not very positive, resulting in only one significant relationship found. Having four independent variables possible with physical and social elements of quality from two observation tools and five dependent variables possible with kindergarten pre-reading assessments, the researcher was hoping to find more significant relationships. Each observation did reveal positive efforts to build children's early literacy skills, which resulted in quality rating scores from each observation tool. Even though the researcher collected and analyzed a lot of data to support quality ratings in preschool environments, the variance among quality rating scores was minimal. Enlarging the sample of preschools in the study would allow for greater variance in quality ratings resulting in the possibility of increased significant findings. If variance existed with *ELLCO Pre-K* average rating scores for social elements of process quality, data could also have been analyzed possibly providing results of significant findings related to children's pre-reading performance.

Elements of Process Quality and Children's Writing Performance

Research Question 2: What influence do the physical and social elements of process quality in a preschool's language and early literacy environment have on the measure of children's writing performance in the beginning of kindergarten?

Quantitative data were collected in the form of average rating scores from physical and social elements of process quality from the *ECERS-R* and *ELLCO Pre-K* observation tools and analyzed with writing assessment scores from the *Conventions of Writing Developmental Scale*.

Results of the data collected and analyzed revealed no significant relationships. The researcher observed very little integration of writing throughout the classroom and very little motivation to engage children in writing for meaningful purposes. The researcher observed children practicing rote skills, like *writing letters, writing words that started with a certain letter,* and *writing one's name*. Very few preschool observations found evidence of writing during play. One example included *a child choosing to work at a writing center equipped with paper and crayons to write a string of letters that represented a list of words that were gift ideas for Santa.* Staff was not observed promoting children as writers, or providing writing instruction specific to children's development. A study conducted by Whitehurst and Lonigan (1998) recommended engaging children in writing activities to support early literacy development.

Even though low quality rating scores were obtained from the *ELLCO Pre-K* with preschools' early writing environments, children performed well with their levels of writing on the *Conventions of Writing Developmental Scale*. The *Conventions of Writing Developmental Scale* determined children's writing level based on their abilities to match sounds to letters to spell words phonetically. Forty-five kindergarten children were developing, while thirty-two kindergarten children were mastering skills when examining their level of writing. A study conducted by Wasik and Hindman (2010) noted the

importance of modeling writing and pointing out environmental print on a daily basis to promote literacy.

With the lack of explicit supports by preschool teachers for writing, the possibility exists that children gained knowledge about beginning writing skills through other preschool activities. Children saw environmental print daily with a Morning Message. Teachers used this opportunity to teach phonological awareness skills and concepts about print. Shared book reading also exposed children to print. Adults modeled expressive reading and may have emphasized sounds in words and other print conventions.

Another possibility contributing to children's successful performance on the *Conventions of Writing Developmental Scale*, may be due to the timing of when children's writing samples were completed. Children completed District Writing Samples during the first month of kindergarten. At this point, children have been experiencing the routines of school and may have demonstrated better self-regulatory behaviors. Self-regulation can affect one's ability to maintain attention to complete challenging tasks.

Phonological sensitivity is another variable to consider regarding children's successful performance on the *Conventions of Writing Developmental Scale*. Being able to understand the progression of phonological awareness skills is developmental. Children need to have an understanding of phonemes in words in order to correspond print with the language it represents (Neuman & Dickinson, 2002). Preschool children would benefit more from being immersed in language than rote learning of skills.

Influencing Factors

Research Question 3: What other factors influence children's pre-reading and writing performance in the beginning of kindergarten, i.e., entry age to kindergarten, gender, race, socioeconomic status, and the educational attainment of preschool staff?

Quantitative data were collected regarding children's demographic information and analyzed with pre-reading and writing assessment scores to determine if relationships existed. Qualitative data were also collected regarding preschool staff's level of educational attainment from completed *Response Surveys for Participating Preschools* to analyze with pre-reading and writing assessment scores.

Results of the data collected and analyzed revealed three significant findings: (a) entry age to kindergarten with the *CIRCLE* PA Composite, (b) gender with *CIRCLE* RLN, and (c) gender with *DIBELS Next*. No significant findings were found with race or socioeconomic status with children's pre-reading or writing performance in the beginning of kindergarten as part of Research Question 3.

Age. Based on the significant relationship found between entry age to kindergarten and the *CIRCLE* PA Composite, children age 5 years 7 months and older upon entry to kindergarten were more likely to achieve proficiency on seven different phonological awareness tasks. Phonological Awareness skills encompass a variety of hierarchical skills from letter-sound correspondences to sound discrimination to sound production to the manipulation of sounds in words, such as phoneme blending, segmenting, substitutions, and phoneme deletions. Children need to be taught that words are made up of phonemes before they begin to manipulate sounds in words (Callaghan & Madelaine, 2012). Age may be a factor to consider when assessing children's attainment

of phonological awareness skills due to varying rates of time for children's development. A study conducted by O'Donnell (2008) found children's ability to recognize all letters of the alphabet to be higher with older children (59% of 5 and 6 year olds not yet enrolled in kindergarten). Callaghan and Madelaine (2012) identified the age range of three to five years as a critical period of growth in phonological sensitivity. Teaching phonological awareness skills early as children are developmentally ready could result in a greater likelihood that children master the alphabetic code when formal reading instruction begins.

Gender. Two significant relationships were found related to gender as the researcher analyzed data to answer Research Question 3. Females were found to perform better than males on both the *CIRCLE* RLN and *DIBELS Next*. Both assessments were timed tests. The following studies about academic performance with females and males identified factors that could also contribute to explaining the results found in this study.

Vanderbilt University (2006) conducted a study involving over 8,000 males and females ranging in age from 2 to 90 from across the United States to examine how male and female brains differ when having to complete timed tests and tasks. Females were found to have a significant advantage over males. Processing speed, the ability to effectively, efficiently, and accurately complete work that is of moderate difficulty, was a factor associated with results. Although females and males showed similar processing speed in preschool and kindergarten, females became much more efficient than males in elementary school and later.

A study conducted by Cameron Ponitz, McClelland, Matthews, and Morrison (2009) in part examined 281 kindergarten children's behavior regulation and its effect on

end-of-kindergarten mathematics, literacy, and vocabulary achievement. Results found kindergarten females to have far better self-regulation than males. Males were a whole year behind females in specific areas of self-regulation, such as the capacity to pay attention, follow directions, finish schoolwork, and stay organized. By the end of kindergarten, males were just beginning to acquire the self-regulatory skills that females demonstrated in the beginning of the year.

Finding significant relationships with gender and the *CIRCLE* RLN and *DIBELS Next* relates well to the research conducted by NIL (2008). Both the *CIRCLE* and *DIBELS Next* assessed the accuracy of naming uppercase and lowercase letters given one minute. NIL (2008) conducted a meta-analysis with about 500 research articles and found rapid automatic naming of letters to have a medium to large predictive relationship with later measures of literacy development.

Gender differences exist throughout many studies as it pertains to academic performance. With this study focusing on early literacy skills and young children, processing speed and self-regulation are just two factors that could contribute to understanding results of data analyses. If females have an advantage over males, then measures should be taken to reduce bias. Perhaps, assessments could be given under different conditions, for example, untimed for males or at a different time of the year to account for maturation and development of self-regulatory behaviors.

Educational attainment of preschool staff. The educational attainment of preschool staff was not included in data analyses due to turnover of staff in some preschools and an unknown connection of staff with particular children in order to demonstrate any relationship with children's academic performance. The researcher did

discover some important connections that are worth mentioning. Preschool 1 had the most veteran staff, no staff turnover, yet obtained the lowest quality rating scores. A staff member in Preschool 1 reported having a Bachelor of Science degree other than in the field of education. Preschool 4 had the newest/least experienced staff, yet staff held the highest educational attainment with a master's degree in education. Research conducted by Kugelmass and Ross-Bernstein (2000) found that education and understanding the importance of developmental theories in early childhood education influenced teachers' interactions and teacher-child relationships. The educational attainment of staff could have a positive effect on the high quality rating scores obtained for elements of process quality from both observation tools. To address the disparities in preschool staff's level of educational attainment, professional development should occur routinely with the focus on current practices and strategies for enhancing children's early literacy development in quality preschools. Preschool 4 also had the highest staff-child ratio of 1:8, which did not seem to affect the quality of children's experiences as measured with the quality rating scores for social elements of process quality from each observation tool.

Research was gathered pertaining to physical and social elements of process quality in preschools' language and early literacy environments, children's pre-reading and writing assessment results in the beginning of kindergarten, in addition to children's demographic data and preschool survey results to answer three research questions for this study. Four significant findings resulted from the data analyses. The researcher summarized important information that was collected for the purpose of data analyses. A summary of the findings was related to research about school readiness, quality preschools, and early literacy development. The following section speaks to the

implications of the findings as it pertains to preschools, parents of young children, and kindergarten teachers.

Implications of the Findings

Findings from this study serve to heighten the researcher's awareness while advancing the researcher's knowledge of quality preschools and expand the literature on quality preschool learning experiences that focus on developmentally appropriate language and early literacy practices. Implications of the findings will also benefit preschools, parents of young children, and kindergarten teachers as they seek to ease children's transition to formal schooling.

Impact on the Researcher

As the researcher conducting this study and a leader in the field of early childhood education, I have acquired a new appreciation for the hard work, dedication, and commitment preschools put forth in preparing children with the readiness skills to make a smooth transition to kindergarten. When preschools choose to participate in Keystone STARS with its rigorous standards and expectations, staff invests their time and talents in striving to provide the highest quality experiences for children. I've developed a fuller understanding of how elements of quality in preschool environments can be measured with different observation tools. Through professional development opportunities, I can share my knowledge with kindergarten teachers about the physical and social elements of quality within preschools' language and early literacy environments. In my role as an Elementary Principal, I can help bridge communication efforts between preschools and kindergarten teachers as it relates to developing children's cognitive, social, and emotional skills. Information can be conveyed to parents about

how early childhood environments are supporting children's development and what parents can do as partners in their child's education.

Preschools

With observation data gathered from this study, preschools can gain a better understanding of elements of process quality as it relates to the development of language and early literacy. Participating preschools routinely receive feedback from OCDEL about the quality of their environments based on *ECERS-R* results. After observations were conducted by the researcher, feedback was provided to preschools about elements of process quality as it related to the *ELLCO Pre-K*. Using a different observation tool placed a greater emphasis on early literacy to provide a solid foundation for children's pre-reading and writing skills. Evidence collected from each preschool observation can inform other preschools about specific physical and social elements that promote a literacy-rich environment. Even the preschools that participated in the study can learn from each other given the unexpected variance that existed with rating scores as a STAR 4 quality preschool.

Participating preschools were provided with recommendations that could tailor future professional development opportunities on how to improve the quality of their instructional strategies and interactions with children that constitute developmentally appropriate approaches to learning and best practices. As found with Crim et al.'s (2008) study, adults need professional development training on specific early literacy skills, like phonemic awareness to implement explicit strategies for early reading and writing development. Preschool staff could also benefit from training on how to interact with children to develop language and vocabulary (Mashburn et al., 2010). And as Wasik et

al. (2006) reported, book reading training teaches adults how to increase vocabulary instruction and ask more open ended questions that promote children's deeper thinking. If preschools want parents involved in their children's cognitive development and growth, opportunities could be extended for parents to participate in professional development with preschool staff. Professional development could also include kindergarten teachers to share best practices in early childhood education which could help ease children's transition to kindergarten.

Findings related to the quality of preschools' environments with children's academic performance helped to link what actually occurs in preschools with parents' and teachers' beliefs about what children need to prepare for kindergarten. Both West et al. (1993) and Xiangkui et al. (2008) reported that parents and teachers felt children need to communicate their wants, needs, and thoughts as they interact with others. The interactions among peers and adults, including the relationships that are established, are meant to be positive in order to support children's sense of belonging which makes learning comfortable and fun (Ladd et al., 2006; NICHD Early Child Care Research Network, 2008). Preschools serve as the bridge between home and school environments and are instrumental in providing what is needed and what is appropriate for children to be ready learners in kindergarten.

Parents of Young Children

Parents want their children to have a solid foundation of readiness skills to make a smooth transition to kindergarten and subsequently become successful readers and writers. A review of the literature found parents' beliefs about the types of readiness skills they felt were important prior to entering kindergarten. McAllister et al. (2005)

reported on the need to strengthen social, emotional, and self-help skills. Parents also believed a strong foundation of basic academic skills was important to prepare children during their preschool years for kindergarten. Play was an important activity that parents felt needed to occur to allow children to develop readiness skills across various domains. Findings from this study validated parents' concerns expressed in the literature review. Preschools are developing children's readiness skills that parents believed to be important in preparation for formal schooling. The researcher observed children in participating preschools to experience a variety of activities that promoted language and early literacy. Staff promoted positive behaviors as children interacted with peers and adults. The researcher's observations discovered some of the same approaches to developing children's cognitive skills as reported in studies by Hartas (2011) and O'Donnell (2008): (a) teaching the alphabet and (b) being read to daily.

Parents of young children can learn from preschools about quality opportunities and developmentally appropriate activities that best promote children's early literacy development. Specific knowledge about quality physical and social elements of process quality was gained from observations conducted in this study. Having joint conversations with preschools can support parents' initiatives to conduct some of what preschools do within their home environments. For example, parents can learn ways to mediate children's learning that fosters their development. The relationship between preschool staff and parents needs to be collaborative with the focus on how they can work together to help children learn and grow. It is a shared responsibility that doesn't end when the children walk through the doors of a preschool.

Kindergarten Teachers

Kindergarten teachers can also benefit from the knowledge of how preschool environments provide quality language and early literacy opportunities and experiences for children. Evidence from observations conducted in quality preschool environments provides kindergarten teachers with a range of strategies and activities that are specific to building language and early literacy. Teachers can review what children learned in preschool and build upon those quality learning experiences. Communication between kindergarten teachers and preschool staff should occur to share their beliefs about important readiness skills and how they can best support children. The goal of transitioning to kindergarten is to have a shared vision for what children need to experience the most success in a kindergarten classroom. Teachers have an equal responsibility as preschools to provide the highest quality experiences for children to develop skills across all domains. The PA Learning Standards continue to serve as a framework by scaffolding developmentally appropriate skills that children developed in preschool and continue to build in kindergarten.

One important readiness skill that teachers stressed in studies conducted by West et al. (1993) and Xiangkui et al. (2008) was their ability to self-regulate, which included taking turns and sharing, sitting still and paying attention, and demonstrating self-control. Having these self-regulatory behaviors is important as it allows children to listen to the teacher, follow directions, and work well with others so learning can occur. Improved learning and behaving requires strong self-regulation skills (Florez, 2011).

Having the knowledge of children's acquired literacy skills is important for kindergarten teachers. Kindergarten teachers often assess children's knowledge of

information learned with specific attention in this study on language and early literacy skills. Knowing preschools' focus with teaching early literacy skills can aid teachers with selecting appropriate kindergarten entry assessments that will accurately capture children's prior knowledge.

The *DIBELS Next* is widely used in elementary schools as a benchmark assessment tool to determine which letters of the alphabet children know and their ability to identify beginning phonemes in words. These skills are a few that *DIBELS Next* benchmark assessments can measure that serve as predictors of children's success as readers. The *DIBELS Next* was found in this study to have significant relationships with two variables: (a) physical elements of process quality from the *ELLCO Pre-K*, and (b) gender (females). As a result, one could conclude that the *DIBELS Next* is a valid and worthwhile assessment for children in the beginning of kindergarten. *DIBELS Next* has the capability of accurately capturing foundational early literacy skills that were learned prior to kindergarten entry.

Given the significant findings related to gender, teachers can continue to learn about gender differences and how to tailor instruction to accommodate children's needs. As mentioned in Vanderbilt University's (2006) study, males may need materials presented in smaller pieces without having strict time limits to complete tasks.

Findings from this study found *CIRCLE* PA Composite results higher with older children entering kindergarten. The timing of the administration of the *CIRCLE* assessment may be something for kindergarten teachers to consider. Many have the opinion that young children are assessed too much. With preschool children registering for kindergarten in early spring, it may be advantageous for kindergarten teachers to wait

to assess children's skills. *CIRCLE* results obtained by the school district in spring may not be indicative of what children know upon entry to kindergarten. Time allows for continued social cultural practices and the further development of phonological sensitivity and high self-regulation, particularly for males. The purpose of giving assessments to young children needs to be considered. Perhaps kindergarten screening data is used for other reasons important to the school district.

Kindergarten teachers can learn a great deal from preschools and should value the hard work and efforts contributed to preparing children for school. Teaching children is a shared responsibility. Kindergarten teachers are given the advantage of beginning to teach where preschools left off rather than starting with the basics as if it was children's first learning experience. Teachers can make connections to what children already know to advance their learning. Children that enter kindergarten having met developmental milestones in preschool, have the capacity for building higher cognitive skills.

Implications of the findings and how it pertains to parents of young children, preschools, and kindergarten teachers have been discussed resulting in a continued need to learn about developmentally appropriate strategies, activities, and assessments that promote strong foundational early literacy skills. Partnerships between families, preschools, and elementary schools should continue to keep lines of communication open in an effort to stay current with best practices in early childhood education and to serve as a resource for one another.

Recommendations for Future Research

This research study expanded the literature on quality preschool learning experiences focusing on developmentally appropriate language and early literacy

practices. The correlational design was important to find whether significant relationships existed between the quality of a preschool's language and early literacy environment and children's pre-reading and writing performance in the beginning of kindergarten.

Results of preschools' average quality rating scores from a single observation may not be fully representative of the quality of preschools' language and early literacy environments over time. Therefore, it is recommended that ratings be obtained from more than one observation conducted with each observation tool if a replication of this study would occur.

Since the researcher examined and compared results from two different observation tools, the time of the year when each tool was used to conduct the observations was not the same. *ECERS-R* observations were conducted in April, June, and October by OCDEL employees, while *ELLCO Pre-K* observations were all conducted by the researcher in November.

If two observation tools are used to conduct further research about the quality of preschools' environments, then the timing of when they are used should be similar for a more comparable interpretation of results. Another factor to consider when conducting observations at different times of the year is the group of students being observed. If preschool environments have developmentally appropriate instruction tailored to individual students' needs, observations occurring at different times of the year would yield different results based on the group of students being instructed and cared for.

The researcher chose to use a second observation tool to provide more insight into the social elements of quality related to language and early literacy, since the *ECERS-R*

focused mostly on physical elements of process quality. The researcher categorized 22 out of 37 indicators related to physical elements with the *ECERS-R*, while only 7 out of 19 indicators from the *ELLCO Pre-K* were categorized as physical elements. Recommendations for future research would suggest using the new and improved version of the *ECERS*, the *ECERS-3* (Harms, Clifford, & Cryer, 2014).

The *ECERS-3* was released in 2014 announcing an emphasis on a much higher level of teacher-child interactions and how materials and the classroom environment are used. For example, the *Music and movement* indicator stresses phonological awareness skills with sounds and rhyming words in songs. The observation tool emphasizes interactions and language that happen during routines and children's play. There is a greater emphasis on cognitive development including language, mathematics, and science. The author's revision process from the *ECERS-R* to the *ECERS-3* included consideration of current literature on child development, early childhood curriculum, and emergent classroom challenges, such as appropriate use of technology, as well as health, safety, and facility recommendations (Harms et al., 2014).

In a study conducted by Dickinson and Tabors (2002), three specific experiences were found to be related to later literacy success: (a) exposure to varied vocabulary, (b) opportunities to be part of conversations that use extended discourse, and (c) home and classroom environments that are cognitively and linguistically stimulating. Future research could be conducted to determine whether professional development opportunities for preschool staff focusing on language and early literacy development affect elements of process quality observed in preschools' environments. If quality

preschools are to continue to provide these experiences to children, then professional development should be provided to staff.

Preschools other than those participating in Keystone STARS should be considered for future research to determine the quality of their language and early literacy environments. Since Keystone STARS is a voluntary quality rating system, many preschools choose not to participate. The need exists for all preschools to provide the same quality experiences for young children.

During the process of purposely selecting preschools to participate in this study, the researcher found that thirteen preschools had a minimum of three children who attended kindergarten during 2014-2015 in the chosen school district of study. The total number of kindergarten children who attended these preschools totaled 153. If the criteria of having a completed *ECERS-R* evaluation by Pennsylvania's Office of Child Development and Early Learning as part of Keystone STARS were eliminated, the sample size would be larger.

This study was conducted with a rural school district in Northeast Pennsylvania. Findings may not be generalized to other rural school districts without analyzing the race and socioeconomic status of participants. Most of the kindergarten participants were white (80%) with a low percentage (32%) having low socioeconomic status. Research has reported that race and socioeconomic status can have an effect on early learning and achievement (Cunningham, 2010; Mashburn, 2008). Future research may want to focus on a more varied and larger sample of participants as it pertains to race and socioeconomic status.

Having significant results from this study related to children's academic performance on the *DIBELS Next*, one could conduct a longitudinal study to determine if their kindergarten pre-reading assessment scores are predictive of their performance over time. For example, results from the *Pennsylvania System of School Assessment (PSSA)* could be used to measure children's reading abilities as early as third grade.

Gender was found to be a significant variable associated with academic achievement with females performing better than males. Existing research found processing speed and self-regulation, among other things, contributing to gender performance (Cameron Ponitz et al., 2009; Vanderbilt University, 2006). Further research could be conducted to add to the literature on gender differences and how children learn.

Conclusion

The intent of this in depth research study was to identify physical and social elements of process quality in a preschool's language and early literacy environment and the influence these factors had on children's pre-reading and writing performance in the beginning of kindergarten in a rural school district. Various quantitative and qualitative data were gathered and analyzed to showcase preschools' efforts in preparing children with the skills needed for a smooth transition to kindergarten. Social and physical elements of process quality in a preschool environment provided the structure for children's learning. Vygotsky's theoretical concepts of mediation and higher mental processes provided the framework surrounding children's development.

Observing and documenting what occurred in preschool environments added to the literature focusing on elements of process quality. Researchers have an ongoing

interest in studying quality preschool environments to examine the extent that children are provided developmentally appropriate experiences that enhance their early language and literacy development. Further research should be conducted to provide additional information about child development and preschools' efforts that influence literacy achievement extended through the elementary years.

Findings from this study had an impact on the researcher, as well as implications for preschools, parents of young children, and kindergarten teachers. As an educational leader, I have a better understanding about the importance of quality preschool experiences and the benefits these experiences provide to children. While parents are a child's first teacher, the role preschool staff has in supporting children's cognitive, social, and emotional development is equally important. Working in an elementary school, I recognize the importance of positive, supportive relationships between adults and children. I see the value in using books to guide children's learning. I understand the significance of play in expanding children's learning opportunities across all domains. Keeping these common occurrences strong in both preschool environments and kindergarten classrooms is important as they define what is developmentally appropriate for young children.

In closing, children are our most valuable assets. Providing quality preschool experiences that support their needs is necessary to link what knowledge children have with new knowledge that prepares them for kindergarten. Every child is unique and should be supported in various ways to build their readiness skills. The responsibility of supporting children's development is a joint effort that can be celebrated by all.

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Appendix A

Summary of STAR Performance Standards

Learning Program

STAR 1

- Site obtains and maintains copies of the appropriate Learning Standards for all age groups in the program.
- Site completes an environment checklist.

STAR 2

- Child observations are completed at the beginning of a child's time in the program and once yearly after the initial observation.
- The program completes an Environment Rating Scale (ERS) self-assessment and creates an Improvement Plan for low scores.

STAR 3

- Child observations must occur at least three times per year, and the results of the observations must be used to tailor the program to the child.
- A learning curriculum that incorporates the Pennsylvania Learning Standards is established.
- An ERS visit is completed with required minimum average and classroom scores.

STAR 4

- Assessment of the child is completed and shared with parents at least twice per year.
- The program's curriculum and assessment tools are cross-walked to the Learning Standards.
- The minimum ERS scores that the facility must meet increase.

Partnerships with Family and Community

STAR 1

- Families are provided information about their community and transitioning their child to other educational settings
- A "Getting to Know You" meeting is held with parents within 60 days of enrollment.

STAR 2

- If the child has an IEP or IFSP, the program requests a copy to inform classroom practice.
- Information about the child's day at the program is shared with parents.
- Parents are offered at least one conference per year.

STAR 3

- A plan is written to refer families to community resources.
- The program coordinates a group activity to include families in meeting the program's goals.
- Parents are offered at least two conferences and a group meeting about transition.
- The program sends a letter of introduction to community and school stakeholders regarding transition and participates in transition activities.

STAR 4

- Activities are implemented to meet IEP/IFSP goals.
- Policies regarding parent engagement and partnership in the planning and decision making for the program are implemented.
- The program offers parents an individual meeting about transition and develops and shares a plan for child transition with parents and stakeholders.

Staff Qualifications and Professional Development

STAR 2

- Effective July 1, 2008, directors and staff will meet specific levels on Pennsylvania's Early Learning Career Lattice.
- Directors participate in at least one professional growth and development activity annually and attend at least 15 hours of training annually.
- One staff member per classroom must have pediatric first aid certification, and all staff must have child abuse mandated reporter training. Staff must attend at least 12 hours of training annually.

STAR 3

- Minimum qualifications for directors and staff increase.
- Directors enroll in the Pennsylvania Director's Credential.
- Directors participate in at least two professional growth and development activities and staff participate in at least one.
- Annual clock hours of training increase to 21 for directors and 18 for teaching staff.

STAR 4

- Staff qualifications represent best practices for the early learning field.
- Directors participate in at least three professional growth and development activities.
- Staff participate in at least two professional growth and development activities.
- Annual clock hours of training increase to 27 for directors and 24 for teaching staff.

Leadership and Management

STAR 1

- Program develops and distributes a Parent Handbook
- Illnesses and injuries are tracked, and a prevention plan is enacted.
- A staff meeting has been held within the past six months.

STAR 2

- Program creates an operating budget and financial record keeping system.
- A personnel policy manual is created and shared with staff.
- System of site safety review and action plan created.
- Staff meetings held at least once per month.
- Director meets with staff to discuss quality and professional development.
- At least two employee benefits are provided to full-time staff.

STAR 3

- Teachers are provided paid lesson planning time monthly.
- Teachers are observed in the classroom, and they are provided feedback.
- Performance evaluations are provided to employees.
- A salary scale is created and shared with staff
- Three benefits are provided to full-time staff.

STAR 4

- An operational business plan, risk management plan, strategic plan, and financial review by a CPA are completed.
- A written code for professional staff conduct is instituted.
- Teachers are provided weekly paid lesson planning time and breaks.
- Four benefits are provided to staff.

(PA OCDEL, 2010).

Appendix B

IRB Approval Letter to Collect School District Data

Indiana University of Pennsylvania
www.iup.edu

Institutional Review Board for the
Protection of Human Subjects
School of Graduate Studies and Research
Stright Hall, Room 113
210 South Tenth Street
Indiana, Pennsylvania 15705-1048

P 724-357-7730
F 724-357-2715
irb-research@iup.edu
www.iup.edu/irb

August 17, 2015

Cynthia L. Muffley
614 Tyler Drive
East Stroudsburg, PA 18301

Dear Ms. Muffley:

Your proposed research project, "Elements of Process Quality Within a Preschool's Language and Early Literacy Environment: The Influence on Children's Pre-Reading and Writing Performance in the Beginning of Kindergarten," (Log No. 15-179) has been reviewed by the IRB and is approved as an expedited review for the period of August 12, 2015 to August 12, 2016.

This approval is for the school district but you cannot collect any data from any pre-schools until we have received and approved the appropriate site approval letters. The letters must be on official letterhead, indicating they understand the nature of the study/what they are being asked to do, and be signed by someone with the authority to provide such approval. This approval does not supersede or obviate compliance with any other University requirements, including, but not limited to, enrollment, degree completion deadlines, topic approval, and conduct of university-affiliated activities.

You should read all of this letter, as it contains important information about conducting your study.

Now that your project has been approved by the IRB, there are elements of the Federal Regulations to which you must attend. IUP adheres to these regulations strictly:

1. You must conduct your study exactly as it was approved by the IRB.
2. Any additions or changes in procedures must be approved by the IRB before they are implemented.
3. You must notify the IRB promptly of any events that affect the safety or well-being of subjects.
4. You must notify the IRB promptly of any modifications of your study or other responses that are necessitated by any events reported in items 2 or 3.

Should you need to continue your research beyond August 12, 2016 you will need to file additional information for continuing review. Please contact the IRB office at irb-research@iup.edu or 724-357-7730 for further information.

The IRB may review or audit your project at random *or* for cause. In accordance with IUP Policy and Federal Regulation (45CFR46.113), the Board may suspend or terminate your project if your project has not been conducted as approved or if other difficulties are detected.

Although your human subjects review process is complete, the School of Graduate Studies and Research requires submission and approval of a Research Topic Approval Form (RTAF) before you can begin your research. If you have not yet submitted your RTAF, the form can be found at http://www.iup.edu/page.aspx?id=91683 .

While not under the purview of the IRB, researchers are responsible for adhering to US copyright law when using existing scales, survey items, or other works in the conduct of research. Information regarding copyright law and compliance at IUP, including links to sample permission request letters, can be found at http://www.iup.edu/page.aspx?id=165526.

I wish you success as you pursue this important endeavor.

Sincerely,

Jen Roberts

Jennifer Roberts, Ph.D.
Chairperson, Institutional Review Board for the Protection of Human Subjects
Professor of Criminology

JLR:jeb

Cc: Dr. Patricia Pinciotti, Dissertation Chair
Dr. Douglas Lare, ESU Graduate Coordinator
Dr. Robert Millward, IUP Graduate Coordinator
Dr. Shala Davis, ESU IRB Chair
Ms. Brenda Boal, Secretary

Appendix C

IRB Approval Letter to Collect Preschool Data

Indiana University of Pennsylvania
www.iup.edu

Institutional Review Board for the
Protection of Human Subjects
School of Graduate Studies and Research
Stright Hall, Room 113
210 South Tenth Street
Indiana, Pennsylvania 15705-1048

P 724-357-7730
F 724-357-2715
irb-research@iup.edu
www.iup.edu/irb

November 6, 2015

Cynthia Muffley
614 Tyler Drive
East Stroudsburg, PA 18301

Dear Ms. Muffley:

The IRB office received research site approval from *Genesis Day Care and Learning Center* and *The Growing Place Child Care Centers* for your proposed research project, "Elements of Process Quality Within a Preschool's Language and Early Literacy Envrionment: The Influence of Children's Pre-Reading and Writing Performance in the Beginning of Kindergarten," (Log No. 15-179). On behalf of the IRB, I have approved the research sites for the period of November 6, 2015 to August 12, 2016.

I wish you success as you pursue this important endeavor.

Sincerely,

Jen Roberts

Jennifer Roberts, Ph.D.
Chairperson, Institutional Review Board for the Protection of Human Subjects
Professor of Criminology

JLR:jeb

Cc: Dr. Patricia Pinciotti, Dissertation Advisor

Appendix D

IRB Approval Letter to Collect OCDEL Data

Indiana University of Pennsylvania
www.iup.edu

Institutional Review Board for the
Protection of Human Subjects
School of Graduate Studies and Research
Stright Hall, Room 113
210 South Tenth Street
Indiana, Pennsylvania 15705-1048

P 724-357-7730
F 724-357-2715
irb-research@iup.edu
www.iup.edu/irb

November 11, 2015

Cynthia Muffley
614 Tyler Drive
East Stroudsburg, PA 18301

Dear Ms. Muffley:

The IRB office received research site approval from the Pennsylvania Office of Child Development and Early Learning for your proposed research project, "Elements of Process Quality Within a Preschool's Language and Early Literacy Envrionment: The Influence of Children's Pre-Reading and Writing Performance in the Beginning of Kindergarten," (Log No. 15-179). On behalf of the IRB, I have approved the research sites for the period of November 11, 2015 to August 12, 2016.

I wish you success as you pursue this important endeavor.

Sincerely,

Jen Roberts

Jennifer Roberts, Ph.D.
Chairperson, Institutional Review Board for the Protection of Human Subjects
Professor of Criminology

JLR:jeb

Cc: Dr. Patricia Pinciotti, Dissertation Advisor

Appendix E

Sample Letter of Intent for School District

B.F. Morey Elementary School
1044 West Main Street
Stroudsburg, PA 18360
Telephone: (570) 421-6371
Fax: (570) 421-4985
District Website: www.sburg.org

Vision Statement: To extend the foundation of learning academically, socially, physically, and emotionally, B.F. Morey Elementary School's vision is to collaborate with members of the community to promote responsible and caring youth in a safe, supportive environment and develop critical thinkers with the ability to succeed by attaining challenging goals as measured by high academic standards.

July 13, 2015

Dear Superintendent of Schools,

As part of my doctoral studies at East Stroudsburg University in conjunction with Indiana University of Pennsylvania, I will be conducting research to determine the elements of process quality within a preschool's language and early literacy environment and the influence a quality preschool's language and early literacy environment has on children's pre-reading and writing performance in the beginning of kindergarten. Additional variables of entry age to kindergarten, gender, race, and socioeconomic status (based on eligibility for the federal free or reduced lunch program status) will also be included to provide further information about children's background and the relative impact of each of the variables. Data will be collected from preschools in the county that send students to your school district. This district was chosen for the study as it has about 50 preschools that serviced children who may have been enrolled in kindergarten during the 2014-2015 school year. Additionally, the school district has a strong interest and partnership with local preschools in preparing children with developmentally appropriate readiness skills to be successful in school. Evaluating the quality of preschool environments as it relates to early literacy skills will provide valuable information to preschools, elementary schools, and families as efforts are strengthened to ease the transition to formal schooling.

The purpose of this letter is to seek permission from the school district to obtain the following data regarding kindergarten students enrolled during the 2014-2015 school year.

- Whether children had preschool experience prior to entering kindergarten, and if so, the name of the preschool from 2014-2015 Kindergarten Registration Screening Forms
- Children's entry age to kindergarten (based upon birthdates) from 2014-2015 Kindergarten Registration Screening Forms
- Children's identification number, gender, race, and socioeconomic status (free or reduced lunch qualification) from the district's student data management system

- Kindergarten Readiness Assessment results from the *CIRCLE* assessment pertaining to Letter Naming, Vocabulary Naming, and Phonological Awareness obtained during the kindergarten registration process
- Kindergarten performance scores obtained in September 2014 from the First Sound Fluency (FSF) and Letter Naming Fluency (LNF) using *DIBELS Next*
- Kindergarten performance scores reported in November 2014 from the end of the first marking period *Concepts About Print* tasks
- District writing samples completed in September 2014

Information will be obtained through the cooperation of an Elementary Principal. Please note that students' identification numbers and related demographic information will be kept confidential. The data collected will be coded and organized using an Excel program, then analyzed using an SPSS statistical program. Data will be stored on a flash drive in a safe accessed by a number code.

Feel free to contact me for further information at cmuffley@sburg.org or (570)421-6371 (work). If you have any questions related to the integrity of the research, you may contact Dr. Patricia Pinciotti, Dissertation Committee Chairperson at 570-422-3356 or ppinciotti@po-box.esu.edu. This project is being submitted for approval to the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects.

Thank you in advance for your time and assistance. I look forward to hearing from you about the school district's willingness to supply the necessary data for the research study.

Sincerely,

Cynthia L. Muffley
Principal, B.F. Morey Elementary School
Stroudsburg Area School District

The Stroudsburg Area School District, an equal opportunity employer, will not discriminate in employment, educational programs or activities, based on race, sex, handicap, or because a person is a disabled veteran or veteran of the Vietnam Era. This policy of nondiscrimination extends to all other legally protected classifications. Publication of this policy in this document is in accordance with State and Federal Laws including Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, and Title VI and VII of the Civil Rights Act of 1964. We further affirm that all curriculum offerings and student enrollment practices will be handled without discrimination based on sex, race, religion, national origin, or on-job related handicaps or disabilities. Inquiries are to be directed to Assistant Superintendent for Personnel and Personnel Services, 503/504 Title IX - Title VI Coordinator, 123 Linden St., Stroudsburg, PA 18360. Phone: (570) 421-1990.

Appendix F

Sample Letter of Intent for Preschools

B.F. Morey Elementary School
1044 West Main Street
Stroudsburg, PA 18360
Telephone: (570) 421-6371
Fax: (570) 421-4985
District Website: www.sburg.org

Vision Statement: To extend the foundation of learning academically, socially, physically, and emotionally, B.F. Morey Elementary School's vision is to collaborate with members of the community to promote responsible and caring youth in a safe, supportive environment and develop critical thinkers with the ability to succeed by attaining challenging goals as measured by high academic standards.

October 2015

Dear Preschool,

As part of my doctoral studies at East Stroudsburg University in conjunction with Indiana University of Pennsylvania, I will be conducting research to determine the process quality factors of a preschool's language and early literacy environment and the influence that a preschool's language and early literacy environment has on children's pre-reading and writing performance in the beginning of kindergarten. Additional variables of entry age to kindergarten, gender, race, and socioeconomic status (based on eligibility for the federal free or reduced lunch program status) will also be included to provide further information about children's background and the relative influence of each of the variables.

Preschools selected for participation in this study must meet three criteria. Data will be collected from select preschools in the county based on the following established criteria: 1) Have a completed evaluation by Pennsylvania's Office of Child Development and Early Learning (OCDEL) utilizing the *ECERS-R* as part of Keystone STARS, 2) Utilize a research-based, developmentally appropriate curriculum, and 3) Have a minimum of three children who attended the chosen school district of study.

The school district chosen for the study has about 50 preschools that serviced children who may have been enrolled in kindergarten during the 2014-2015 school year. Additionally, the school district has a strong interest and partnership with local preschools in preparing children with developmentally appropriate readiness skills to be successful in school.

Once eligible preschools have given permission to participate, those children who attended kindergarten in the chosen school district will become the sample to participate in the study. Their kindergarten assessment data will then be analyzed to determine the influence of a quality preschool's language and early literacy environment has on children's pre-reading and writing performance outcomes. Evaluating the process quality of preschool environments as it relates to early literacy skills will provide valuable information to preschools, elementary schools, and families as efforts are strengthened to ease the transition to formal schooling.

The purpose of this letter is to seek permission from select preschools in the county to allow the researcher to observe preschools' language and early literacy environments utilizing the *Early Language & Literacy Classroom Observation (ELLCO) Pre-K* tool. The information gathered from the *ELLCO Pre-K* will supplement the available *ECERS-R* data obtained from OCDEL. Data from both observation tools will provide a clear picture of process quality factors related to language and early literacy that are evident in quality preschool environments.

The researcher is also asking for the preschool's cooperation in completing a *Response Survey for Participating Preschools* for the purpose of obtaining additional information that may contribute to the quality results of the preschool's language and early literacy environment. Completion of the *Response Survey for Participating Preschools* will be expected when the researcher returns to conduct an observation.

Participation in the research study is voluntary. By giving consent to participate in the study, the Preschool Director agrees to complete the *Response Survey for Participating Preschools* and will allow the researcher to conduct a 2-3 hour observation utilizing the *ELLCO Pre-K*. If staff demonstrates or states any level of discomfort during the observation, the researcher will discontinue observing. The preschool can withdraw from the study at any time.

Please note that the name of the preschool will be kept confidential. The data collected will be coded and organized using an Excel program, then analyzed using an SPSS statistical program. Data will be stored on a flash drive in a safe accessed by a number code. At the conclusion of the study, the name of the preschool will be removed to ensure anonymity.

Feel free to contact me for further information at cmuffley@sburg.org or (570)421-6371 (work). If you have any questions related to the integrity of the research, you may contact Dr. Patricia Pinciotti, Dissertation Committee Chairperson, at 570-422-3356 or ppinciotti@po-box.esu.edu. This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (724) 357-7730.

Thank you in advance for your time and assistance. I look forward to hearing from you about your preschool's willingness to allow me to observe and gain the necessary data for the research study.

Sincerely,

Cynthia L. Muffley
Principal, B.F. Morey Elementary School
Stroudsburg Area School District

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Appendix G

Response Survey for Participating Preschools

Response Survey for Participating Preschools

I have read and understand the consent letter and agree to participate in the research study by completing the following *Response Survey for Participating Preschools*. I understand that participation is voluntary, and I am allowed to withdraw my participation at any time. I also understand that my responses will be kept confidential.

Preschool Name:

_____

Staff

1. How many staff currently works with preschool children age 4-5? _____
2. How many years of experience does *each* staff member have working with preschool children age 4-5?
   Example: Staff #1 – 5 years

   _____ _____
   _____ _____

Staff Turnover

1. Is the current staff working with preschool children age 4-5 the same as in 2014?
   YES / NO
2. If NO, how many staff who worked with preschool children age 4-5 in 2014 are no longer employed by the preschool? _____
3. How many staff working with preschool children age 4-5 are new to the preschool as of 2015? _____

Educational Attainment of Staff & Field of Study

For *each* staff member (past and present) that works/worked with preschool children age 4-5, list their *Level of Educational Attainment* and *Field of Study* if a degree was earned.

Level of Educational Attainment includes: High School Diploma or GED, Associates Degree, Bachelors Degree, Masters Degree, Doctorate Degree, Other (please list)

Field of Study includes: Early Childhood Education, Elementary Education, Other (please list)

2015	**2014**
Example: Staff #1 - Bachelors Degree, Early Childhood Education	(Staff who worked with preschool children age 4-5 who are no longer employed by the preschool)
_____	_____
_____	_____
_____	_____

Curriculum

1. What is the name of the current research-based developmentally appropriate curriculum utilized at the preschool?

   _____

2. What other resources are currently being utilized?

   _____

3. Was there a different curriculum utilized in 2014? YES / NO
4. If YES, what was the name of the curriculum?

   _____

5. Why was a new curriculum chosen for 2015?

   _____

6. What other resources were utilized in 2014?

   _____

Daily Schedule

1. Does the current daily preschool schedule incorporate early literacy activities?
   YES / NO
2. If YES, list examples. (Daily Schedule can be attached)

   _____
   _____
   _____

3. Are early literacy assessments administered to preschool children?
   YES / NO
4. If YES, what are they and how often are they administered?

   _____
   _____
   _____

Additional Information

_____
_____
_____
_____
_____

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone 724-357-7730). For questions related to the integrity of the research, you may contact Dr. Patricia Pinciotti, Dissertation Committee Chairperson at 570-422-3356 or ppinciotti@po-box.esu.edu. The researcher can also be contacted at cmuffley@sburg.org or 570-421-6371 (work) for further information.

Appendix H

Sample Letter of Intent for OCDEL

B.F. Morey Elementary School
1044 West Main Street
Stroudsburg, PA 18360
Telephone: (570) 421-6371
Fax: (570) 421-4985
District Website: www.sburg.org

Vision Statement: To extend the foundation of learning academically, socially, physically, and emotionally, B.F. Morey Elementary School's vision is to collaborate with members of the community to promote responsible and caring youth in a safe, supportive environment and develop critical thinkers with the ability to succeed by attaining challenging goals as measured by high academic standards.

July 13, 2015

Dear Research Associate at OCDEL,

As part of my doctoral studies at East Stroudsburg University in conjunction with Indiana University of Pennsylvania, I will be conducting research to determine the elements of process quality within a preschool's language and early literacy environment and the influence a quality preschool's language and early literacy environment has on children's pre-reading and writing performance in the beginning of kindergarten. Additional variables of entry age to kindergarten, gender, race, and socioeconomic status (based on eligibility for the federal free or reduced lunch program status) will also be included in this study to provide further information about children's background and the relative impact of each of the variables. Data will be collected from preschools that send students to one of the school districts in the selected county. This district was chosen for the study as it has about 50 preschools that serviced children who may have been enrolled in kindergarten during the 2014-2015 school year. Additionally, the school district has a strong interest and partnership with local preschools in preparing children with the appropriate readiness skills to be successful in school. Evaluating the quality of preschool environments as it relates to early literacy skills will provide valuable information to preschools, elementary schools, and families as efforts are strengthened to ease the transition to formal schooling.

The purpose of this letter is to seek permission from the Office of Child Development and Early Learning (OCDEL) to obtain the following data.

- Given the names of preschools in the selected county, evaluation scores for each brief indicator on the most recently administered ECERS-R

Please note that preschools' names will be kept confidential. The data collected will be coded and organized using an Excel program, then analyzed using an SPSS statistical program. Data will be stored on a flash drive in a safe accessed by a number code. At the conclusion of the study, preschools' names will be removed to ensure anonymity.

Feel free to contact me for further information at cmuffley@sburg.org or (570)421-6371 (work). If you have any questions related to the integrity of the research, you may contact Dr. Patricia Pinciotti,

Dissertation Committee Chairperson at 570-422-3356 or ppinciotti@po-box.esu.edu. This project is being submitted for approval to the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects.

Thank you in advance for your time and assistance. I look forward to hearing from you about OCDEL's willingness to supply the necessary data for the research study.

Sincerely,

Cynthia L. Muffley

Principal, B.F. Morey Elementary School

Stroudsburg Area School District

The Stroudsburg Area School District, an equal opportunity employer, will not discriminate in employment, educational programs or activities, based on race, sex, handicap, or because a person is a disabled veteran or veteran of the Vietnam Era. This policy of nondiscrimination extends to all other legally protected classifications. Publication of this policy in this document is in accordance with State and Federal Laws including Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, and Title VI and VII of the Civil Rights Act of 1964. We further affirm that all curriculum offerings and student enrollment practices will be handled without discrimination based on sex, race, religion, national origin, or on-job related handicaps or disabilities. Inquiries are to be directed to Assistant Superintendent for Personnel and Personnel Services, 503/504 Title IX - Title VI Coordinator, 123 Linden St., Stroudsburg, PA 18360. Phone: (570) 421-1990.

Appendix I

Sample Informed Consent for Preschools

Indiana University of Pennsylvania

INFORMED CONSENT DOCUMENT

Title: *Elements of Process Quality Within a Preschool's Language and Early Literacy Environment: The Influence on Children's Pre-Reading and Writing Performance in the Beginning of Kindergarten*

Researcher: *Cynthia L. Muffley, doctoral candidate at Indiana University of Pennsylvania / East Stroudsburg University*

Introduction

The purpose of this correlational study is to identify the process quality factors within a preschool's language and early literacy environment and the influence these factors have on children's pre-reading and writing performance in the beginning of kindergarten. While early literacy is just one critical area of development within preschool environments, it is the most important as it relates to preparing children to be successful readers and writers. Additional variables of entry age to kindergarten, gender, race, and socioeconomic status (based on eligibility for the federal free or reduced lunch program status) will also be included to provide further information about children's background and the relative influence of each of the variables.

Your preschool has been selected to participate in the study based on the following established criteria: 1) Have a completed evaluation by Pennsylvania's Office of Child Development and Early Learning utilizing the ECERS-R as part of the Keystone STARS, 2) Utilize a research-based, developmentally appropriate curriculum, and 3) Had a minimum of three children who attended kindergarten in the chosen school district of study. Once your preschool has given permission to participate, those children who were enrolled in preschool prior to attending kindergarten during the 2014-2015 school year will become the sample to participate in the study. Their kindergarten assessment data will then be analyzed to determine the influence a quality preschool's language and early literacy environment has on children's pre-reading and writing performance outcomes. The school district chosen for the study has about 50 preschools that serviced children who may have been enrolled in kindergarten during the 2014-2015 school year. Additionally, the school district has a strong interest and partnership with local preschools in preparing children with developmentally appropriate readiness skills to be successful in school.

Description of Procedures

Your agreement to participate in the study will allow the researcher to observe a preschool's language and early literacy environment for 2-3 hours utilizing the *Early Language & Literacy Classroom Observation (ELLCO) Pre-K* tool. The information gathered from the *ELLCO Pre-K* will supplement the available *ECERS-R* data obtained from OCDEL. By giving consent to participate in the study, you agree to also complete a *Response Survey for Participating Preschools*. Information gathered on the *Response Survey for Participating Preschools* pertains to the educational attainment of staff, curriculum, and assessments.

Using the SPSS statistical software program, the researcher will examine scores from each element of process quality related to the development of language and early literacy skills from both observation tools, the ECERS-R and ELLCO Pre-K. Process quality refers to the physical and social elements that provide children with materials, opportunities, interactions, and activities that develop school readiness. There are 22 indicators from the ECERS-R that represent physical elements of process quality and 15 indicators that represent social elements of process quality. There are 7 indicators from the ELLCO Pre-K that represent physical elements of process quality and 12 indicators that represent social elements of

process quality. Summary statistics of mean and standard deviation will be calculated for each observation tool and used in later regression analyses.

Risks / Benefits

The collection of data in this correlational study includes identifiable information related to kindergarten student participants and participating preschools. Observation data related to quality factors of preschools' language and early literacy environments will be recorded specific to the name of each participating preschool. Qualitative data to be documented in the form of observation notes for each participating preschool will be reported as a source of evidence in order to accurately score each ELLCO Pre-K item. Qualitative data gathered from completed *Response Surveys for Participating Preschools* will also be reported specific to each participating preschool. Confidentiality will be maintained throughout the data collection process. Observation data that are collected will be numerically coded, organized electronically using an Excel program and later imported to SPSS for analyzing. Names of students and preschools that are listed to assist with the participant selection process and data gathering will be removed at the conclusion of the study.

If you should decide to participate in the study, there may be direct benefits to your preschool. While other studies have related children's social, emotional, and cognitive skills to later academic achievement, this study places a strong emphasis on language and early literacy. The attainment of language and early literacy is a developmental progression that extends through the preschool years as necessary communication skills to be successful in school. There are no other studies that have reported on the use of the Pre-K version of the *Early Language and Literacy Classroom Observation (ELLCO)* to describe what occurs in preschools' language and early literacy environments. Results from this study will be obtained from preschools participating in the Keystone STARS in a rural area of northeast Pennsylvania. No known studies have been conducted with preschools in the Keystone STARS other than what the Pennsylvania Office of Child Development and Early Learning has reported (PA OCDEL, 2010). Findings from this study will expand the literature on quality learning experiences focusing on developmentally appropriate language and early literacy practices. Suggestions for improving the quality of preschool environments with a focus on language and early literacy has many benefits that may help close the readiness gap and ease the transition to formal schooling.

Costs and Compensation

Compensation will be provided to preschools choosing to participate in the form of a $20 gift card. Participating preschools will receive the gift card after signing the Informed Consent Document to participate in the study.

Participant Rights

The children who are indirectly observed in the preschool settings and the kindergarten students whose demographic and existing assessment data to be collected are classified as a vulnerable population. Participation is voluntary. If staff demonstrates or states any level of discomfort during the observation, the researcher will discontinue observing. The preschool can withdraw from the study at any time.

Confidentiality

Identifiable data will be kept confidential until removed at the conclusion of the study. Names of students and associated names of preschools are necessary to assist with the participant selection process and subsequent data collection. Preschool observation data and Response Survey information will be

linked to each preschool's name. Linking the observation data and Response Survey information collected for each participating preschool with the STAR rating of each preschool program will assist the researcher in explaining the process quality factors of a preschool's language and early literacy environment.

Data will be stored on a flash drive in a safe accessed by a number code. All paper reports received prior to storing the information electronically will also be stored in a safe accessed by a number code. The safe is located at the home of the researcher: 614 Tyler Drive, East Stroudsburg, PA 18301. The researcher is the only person with access to the code.

Questions or Concerns

Participants are encouraged to ask questions throughout the study. Participants will have opportunities to discuss results of the study upon its completion. For further information, please contact the researcher at cmuffley@sburg.org or Dissertation Committee Chairperson: Dr. Patricia Pinciotti at ppinciotti@po-box.esu.edu.

Consent

As a research participant, I have read the entire Informed Consent Document and I am **in agreement to participate** in the project. My signature below releases the researcher form all risks of participation.

(Printed Name of Participant)	(Signature of Participant)	(Date)

(Printed Name of Preschool)

(Printed Name of Researcher)	(Signature of Researcher)	(Date)

Telephone contact:_____ **or**

Email contact:_____@_____

Thank you in advance for your participation!

*THIS PROJECT HAS BEEN APPROVED BY THE INDIANA UNIVERSITY OF PENNSYLVANIA INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS (PHONE 724.357.7730).