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By

Amanda Rutter

June 2016

THE DEVELOPMENT OF A SCALE MEASURING THE EXPLORATORY
LEARNING ENVIRONMENT

Dissertation Presented to Dissertation Committee
of the College of Education
University of Houston

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

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Abstract

Quality in the field of early childhood education has become increasingly important as connections between the quality of a program and child cognitive outcomes have been demonstrated in research. Consequently, this research has guided the construction of developmentally appropriate practices, also known as best practices, in the field of early childhood education. These practices have been published by the National Association for the Education of Young Children (2009). Additionally, some concepts of best practices in early childhood education have been inspired by exploratory learning. Exploratory learning is a unique educational approach which, in more recent years, has gained popularity in American culture, particularly with early childhood education. To measure the quality of early childhood programs, environmental rating scales are predominantly and widely used; however, currently utilized classroom quality rating scales heavily measure structured learning practices while minimally measuring exploratory learning practices, leading to lower scale scores in an exploratory learning environment. To date, there are no available assessment tools that adequately evaluate the quality of exploratory learning environments and practices. However, before a cumulative environmental rating scale that equally measures structured learning and exploratory learning practices is synthesized, an environmental rating scale to measure the environmental quality of exploratory learning environments should be created. Therefore, this study's aim is to create a new environmental rating scale that would more adequately measure the quality of exploratory learning environments and practices

through defining exploratory learning, and delineating key constructs to exploratory learning practices and what they look like within pre-kindergarten classrooms. In order to accomplish this task, the research will pilot a new environmental rating scale with pre-kindergarten classrooms that implements exploratory learning practices. The scale will be created based on a review of literature as well as on data obtained through interviews with pre-kindergarten teachers with experience and training pertaining to exploratory learning, and a focus group with experienced consultants that aid teachers in implementing exploratory learning practices. The goal of the pilot study is to establish a scale that measures the environmental quality of exploratory learning environments, which implement different practices than structured learning environments; hence the judgment criteria should suit the educational environment. Furthermore, the goal of the study is to further demonstrate that exploratory learning practices are currently not sufficiently measured by widely used environmental rating scales, and that in order to truly capture the quality of an educational environment, a more comprehensive scale is needed.

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SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

Chapter 1

Introduction

Background

Early childhood education has become increasingly important within the United States in the past few decades. Beginning in the 1960s, it was recognized there was a need to create more comprehensive and integrated systems in the United States regarding the care and education of young children, stemming from an influx of women entering the workforce (Hill Scott, 2012). In addition, early childhood education became important as the disparity of educational outcomes between socioeconomic statuses was recognized. In response to the gaps in education between economically disadvantaged children and their peers, President Lyndon B. Johnson began the Head Start program aimed at educating poor children to be school ready by increasing pre-literacy skills, pre-numeracy skills, and social skills (Freitas, Shelton, & Tudge, 2008). Moreover, educational theory and the expansion of neuroscience and brain research, including brain mapping, led researchers to discover the importance of the early years of life.

Neuroscience researchers found that everything a child interacts with through their senses of sight, sound, touch, smell, and taste stimulates electrical activity in the brain and “each time the brain is stimulated, the experience rewires the brain” storing information in the synapses, thus forming knowledge (Wasserman, 2007, p. 415). The more experiences a young child is exposed to in their first five years of life, the more information they store in their brain and greater knowledge is formed. In fact, between 80%-85% of the brain’s neurological pathways develops during the first six years of life (Katz, 2003). Therefore, it has been concluded that early experiences build the foundation for future learning and

that the largest amount of brain development occurs in the first several years of life, thus giving support to the importance of early childhood education (Center on the Developing Child at Harvard University, 2007; Grindal, Hinton, & Shonkoff, 2012; Katz, 2003).

Consequently, as early childhood education has risen in importance, so has the importance of high-quality early childhood programs. Developmentally appropriate practices, also known as best practices in early childhood education, have emerged from the combination of educational theory and empirical research on how to produce quality practices and educational environments. Developmentally appropriate and best practices focus on providing young children with quality instruction and environments while educating the whole child. Exploratory learning practices are viewed as developmentally appropriate and best practice, for they provide high-quality environments that foster metacognitive and critical thinking skills, as well as executive functioning by making learning visible through fostering social interactions and continually documenting learning (Salmon, 2008).

In the United States, some early childhood programs implement exploratory learning environments such as Montessori, Reggio-inspired, and HighScope programs. Similarly, some educators have strived to incorporate more exploratory learning practices into their early childhood classrooms. Although best practices in early childhood education have been identified and guide classroom practices, improvements can be made on how best to assess the quality of early childhood environments that implement exploratory learning practices.

The aim of this study is to develop a scale to assess the environmental quality of early childhood classrooms housed in centers that implement exploratory learning

practices. This research seeks to develop and pilot a new assessment tool to evaluate the quality of exploratory learning environments. Current environmental rating scales in the field of early childhood education focus on measuring the quality of structured learning environments. To conduct this study, an instrument will be developed and piloted with four early childhood educators. The results of the piloted scale will be summarized in this study and used to make recommendations for future research in evaluating the quality of exploratory learning early childhood environments.

Need for the Study

In today's society, a majority of assessments in the field of education are more concerned with evaluating learning outcomes rather than learning processes (Krechevsky & Stork, 2000). In addition, there has been a call for increased assessment of early childhood education environments to measure the environmental quality of a program. Higher quality programs are believed to implement better practices, thus producing better learning outcomes, which are reflected in their environmental rating scale scores. Several environmental rating scales exist that measure the environmental quality of early childhood settings. These scales include the Infant/Toddler Environmental Rating Scale-Revised (ITERS-R; Harms, Cryer, & Clifford, 2006) and the Early Childhood Environmental Rating Scale-Revised (ECERS-R; Harms, Cryer, & Clifford, 1998). However, research has shown that scales such as the aforementioned heavily measure structured learning constructs, or quality in terms of indicators such as teacher-child ratio, class size, teacher credentials, spaciousness of facilities, amount of learning materials provided, type of care being provided, length of the preschool day, and cost of care (Pianta, 2007). Unfortunately, these indicators of quality do not identify and measure

what is offered as educationally important in early childhood programs for young children such as social development (Pianta, 2007). Yet, decisions regarding policy and design, as well as professional development for early childhood programs are more often than not solely based on environmental rating scale scores. Another instrument, Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008), assesses teacher-child interactions in the classroom as an indicator of quality. However, CLASS measures teacher-child interactions in terms of what the teacher is doing to support the child rather than through how the teacher creates a rich environment that scaffolds a child's development. The three instruments mentioned above either measure structured learning environment constructs or structural learning practices; however, they either do not or minimally measure exploratory learning constructs and practices. Therefore, the ITES-R, ECERS-R, and CLASS instruments only measure certain constructs of environmental quality when implemented in exploratory learning settings, while missing evaluating other key exploratory learning constructs which will be discussed later in this paper.

Interestingly, to date, no scales have been developed to measure the environmental quality of child-directed classrooms that implement exploratory learning practices. This failure results in exploratory learning environments' scoring lower on environmental rating scales. These lower scores, however, do not accurately reflect the quality of exploratory learning environments since the methods of instruction and classroom environment are different from structured learning environments. Hence, it is argued that a single, easy to implement, cost-effective instrument that assesses pre-

kindergarten exploratory learning components should be synthesized, which is what this study seeks to accomplish.

Statement of Purpose

A few key differences between exploratory learning approaches and structured learning approaches are important when considering environmental quality. These differences in methods and philosophies can make adapting and measuring this style of learning difficult. First and foremost, unlike structured learning environments, exploratory learning classrooms are not curriculum driven; rather, learning is directed by student interests. This is exemplified as teachers act as facilitators and curriculum makers creating rich environments that foster student inquiry. In an exploratory learning environment, the teacher provides a rich environment that is open for children to explore. As children explore the environment, they develop an interest and generate questions, generally geared towards a specific topic. The teacher then guides children to further explore their interests and provides them the resources to draw conclusions to their questions. Alternatively, in structured learning classrooms, teachers directly pass on information to students and tend to have students engage in rote and recital activities or pre-determined or prescribed activities that offer little room for exploration.

Moreover, exploratory learning environments are not rigid, nor do they operate on a strict schedule of activities (Firlik, 1996). Instead, children pursue their interests at their own pace. As a result, projects conducted by children can vary in duration. On the other hand, in structured learning classrooms, there is not only a strict daily schedule of activities such as attending ancillary classes and engaging in workstation activities, there is also a strict schedule of developmental progression and generally specific benchmarks

set forth by the administration that need to be accomplished by specific dates or points within the academic year.

In exploratory learning environments, teachers also take on the role of researchers, reflecting through portfolios on how to not only further enhance the learning experience, but also how to assess the needs of their students. In exploratory learning approaches, teachers continually document and reflect on their practices in order to improve and evolve (New, 1994). The documentation process is in depth and consists of input from the teacher, child, and parents. In contrast, in structured learning classrooms, teachers take on the role of assessors, continually evaluating each child's progress through observations and assessments established by the school, district, or state, rather than through reflective practices.

Additionally, exploratory learning environments tend to bring nature into the classroom environment. For example, Reggio Emilia classrooms reflect the community around them with natural materials such as wood as opposed to man-made materials, bring the outdoor in with fresh and real plant life placed around the classroom, and display children's work in meaningful ways in which developmental progression is observable. The environment is created to be rich in content and texture to evoke exploration from the child. Comparatively, structured learning classrooms are decorated to the teacher's taste and display visual aids such as alphabet, number, weather, and word charts that can clutter the classroom walls. Moreover, structured learning classrooms more often than not are less naturalistic, incorporating bright colors and man-made materials that can be distracting and visually overwhelming.

Due to these differences, the most commonly used environmental rating scales are less effective when assessing the environmental quality of exploratory learning classrooms. While the concepts of exploratory learning practices have been recently investigated, questions still remain as to how to best assess the environmental quality of exploratory learning classrooms in a quantifiable manner that is a truer reflection of the environmental quality of exploratory learning classrooms. Therefore, it is argued that an easy to implement, cost-effective instrument that assesses the quality of pre-kindergarten exploratory learning classrooms should be constructed.

Furthermore, this study aims to clarify that there is a difference between young children whom simply attend an educational environment versus young children whom attend a high quality educational environment. Moreover, this study will lend additional evidence to the wealth of research that supports the importance of high quality educational environments for young children and their development; as well bring further support to the best practice of play-based and exploratory learning. Lastly, this study will demonstrate that while a beautiful educational environment is aesthetically pleasing, beauty alone does not equal a high quality educational environment.

Study Questions

Based on previous research and guided by the intentions of the present student, the following study questions are posed:

- 1) What are the best examples of each exploratory learning construct that an assessor should see when measuring a classroom?
- 2) What are the appropriate descriptors to describe the different ratings of an instrument?

- 3) What are the psychometric properties of a scale intended to assess the environmental quality of pre-kindergarten exploratory learning environments?
- 4) What are the results of a pilot instrument intended to assess the environmental quality of pre-kindergarten exploratory learning classrooms?

Definition of Key Terminology

Early childhood education. Early childhood education describes the educational services provided to early children from birth to age 8. The term early childhood education is used interchangeably with the terms “early care and education,” “early education,” “early childhood,” and “comprehensive early childhood” (Kagan & Kauerz, 2012). For this study, early childhood education is defined as the education provided to young children from birth to age 8.

Developmentally appropriate and best practices. Developmentally appropriate practices is the term used to describe the best practices educators use in the field of early childhood education to aid the growth of young children across all developmental domains (cognitive, social, emotional, and physical). Such practice has been defined by the National Association for the Education of Young Children (NAEYC), an organization that specializes in early childhood education. Developmentally appropriate practices can be summarized as early childhood educators implementing instructional practices that are developmentally and age appropriate, adequately challenging for the individual student, and meet the varying needs, including the cultural needs, of the learner.

It should also be noted that the terms developmentally appropriate practice and best practices are often used interchangeably and refer to the same definitions as described above. For this study, the researcher will use the term developmentally

appropriate practice and best practice when discussing developmentally appropriate practice in the field of early childhood education.

Structured learning. Structured learning is a formalized educational approach where the teacher is in charge of learning through direct instruction to the child (Fowell & Lawton, 1992). While structured learning is similar to formal learning, structured learning is not synonymous with formal learning; rather formal learning is defined as learning that takes place within schools. In this paper, structured learning is also referred to as traditional teacher-directed practices.

Exploratory learning. Young children learn through their experiences with the people and objects around them (Stone & Staley, 1997). Exploratory learning is also known as discovery-based learning, discovery learning, experience-based learning, or inquiry-based learning. Research has shown that exploratory learning methods increase social interaction between children and their peers and teachers which positively affect a child's development (Manning, Szecsi, Geiken, Van Meetersen, & Kato, 2009). Exploratory learning is the act of children leading their learning, combining the use of their senses with their experiences to form schemas and foster cognitive development (Stone & Staley, 1997). It should be clarified that exploratory learning is not synonymous with informal learning. Rather informal learning is learning that occurs outside of a classroom while exploratory learning occurs within a classroom environment.

Reggio Emilia educational approach. Reggio Emilia is an exploratory educational approach formed in Reggio Emilia, Italy following World War II. It focuses on high-quality preschool and primary education that is child-directed.

Reggio-inspired. Although Reggio Emilia is regarded as an educational approach, it is not considered to be a model that educators can simply copy (Wein, Guyevskey, & Berdoussis, 2011). As such, the term “Reggio-inspired” is utilized to describe schools across the world that implement Reggio Emilia educational approaches and strategies. When classrooms and schools are Reggio-inspired, teachers “re-interpret – for their own contexts and through their own understandings” Reggio processes (Wein et al., 2011, p. 1).

Environmental quality. Quality is a term that is varying in the field of education with no set definition, or a lack of consensus on a specific definition. For the purposes of this study, quality will be discussed as it relates to the quality of an early childhood education environment. Environmental quality refers to the setting in which young children have experiences, which include their interactions with educators and peers, learning materials, and activities (Clifford, Reszka, & Rossbach, 2010). Environmental quality is important, for in educational programs, the quality of a programs environment is believed to relate to the developmental outcomes of students (Sylva, Siraj-Blatchford, Taggart, Sammons, Melhuish, Elliot, & Totsika, 2006).

Environmental rating scale. Environmental rating scales are instruments designed to assess the quality of early childhood educational environments (Frank Porter Graham Child Development Institute, n. d.). Currently, five environmental rating scales and assessments are frequently used in the field of early childhood education, the Early Childhood Environment Rating Scale-Revised (ECERS-R), the Infant/Toddler Environment Rating Scale-Revised (ITERS-R), the Family Child Care Environment

Rating Scale-Revised (FCCERS-R), the School-Age Care Environment Rating Scale (SACERS), and the Classroom Assessment Scoring System (CLASS).

Assessment. Assessment in early childhood education is “the intention to provide a picture of the ways in which children act, think and learn,” as well as how teachers are imparting and guiding the formation of knowledge in children, and the quality of the educational environment (Dunphy, n. d.). In other words, assessment is the process of evaluating the learning and development of young children through observing, recording, and evaluating the learning environment, teacher performance and quality, and/or children’s’ performance (Dunphy, n. d.). Additionally, assessments in the field of early childhood education are based on empirical research detailing how children between the ages of birth to age 8 learn, and what young children’s developmental needs are.

Practitioner. Early childhood education has become increasingly important in the United States of America since the 1960s. As a result, a greater extent of research has been conducted in this field which led to the formulation of developmentally appropriate and best practices for early childhood practitioners. An early childhood practitioner is a person who works with young children-birth through age 8-by providing instruction and care, in schools, child-care centers, and family homes whether they are credentialed or not (Texas Early Childhood Professional Development System, 2013). Thus an early childhood practitioner includes administrators, teachers, assistant teachers, center staff members, providers, and caregivers (Texas Early Childhood Professional Development System, 2013).

Chapter II

Review of Literature

Introduction

Educational theory and neuroscience research has demonstrated that the early years of a child's life are extremely important for building foundational knowledge and skills that lead to later life success. Consequently, early childhood education has become increasingly viewed as important regarding the development of young children and a tool to aid children in realizing their full potential. More specifically, empirical evidence has demonstrated that high-quality early childhood education environments are the most beneficial in producing greater developmental gains. High-quality early childhood education environments, therefore, have been recognized as critical to a child's development.

Research has also shown that high-quality early childhood education programs can narrow the achievement gap between students of low and high socioeconomic statuses and reduce crime rates (Harrison, 2008; Schweinhart, Barnes, & Weikhart, 2005). Additionally, research has shown that children who attend high-quality early childhood education programs perform better in kindergarten than children who do not (Gormley, Phillips, & Gayer, 2008). However, the benefits of early childhood education are not limited to kindergarten. Further research has shown that children who attend high-quality early childhood education programs prior to kindergarten are less likely than their peers who do not attend early childhood programs to repeat grades, less likely to require special education services, have reduced school drop-out rates, have higher high

school graduation rates, and have higher college attendance rates (Barnett, 2008; Barnett & Masse, 2007; Reynolds et al. , 2002).

Despite the growing body of research identifying the benefits of high-quality early childhood education programs, many children do not have access to high-quality early childhood programs. Due to lack of access and inconsistency of quality in early childhood program across the United States, research regarding high-quality educational practices and environments in the field of early childhood have become more widely conducted to determine what are developmentally appropriate and best practices for educating young children, what are the best environments in which to education young children, as well as how to evaluate the quality of early childhood educational environments.

In this chapter, developmentally appropriate and best practices in early childhood education will be discussed along with the quality of early childhood education environments. More specifically, how early childhood educational environments are assessed for quality through environmental rating scales will also be explored. The researcher will specifically discuss three widely utilized environmental rating scales and assessments that evaluate the quality of an early childhood environment. Additionally, these three specific environmental rating scales and assessments will be discussed to show their limitations when evaluating exploratory learning environments, demonstrating the need for the development of an instrument that measures the environmental quality of exploratory learning environments. A summary at the end of the chapter will conclude the findings leading into the current study.

Theoretical Framework

Quality in early childhood education. The rapid growth of early childhood education in the United States the 1980s and 1990s increased the need for quality control across programs (Goffin, 2012). The growth of early childhood education also increased the need for equitable access to services, the formation of a systematic rather than patchwork approach to early childhood education, and performance and financial accountability measures (Goffin, 2012). Additionally, the release of the *Cost, Quality and Child Outcomes in Child Care Centers* report of 1995 increased the prominence of the issue of quality (Rose & Schimke, 2011). In today's society, the quality of an early childhood education program is central in signifying a program's effectiveness (Kagan & Kauerz, 2012).

In recent years, research has accumulated signifying the importance of high-quality early childhood education programs in aiding young children's development (Setodji, Le, & Schaack, 2013; Shonkoff & Phillips, 2000). Simply stated, research has shown that attending an educational environment is not the same as learning in a high quality educational environment. Rather, empirical evidence supports that children make greater developmental gains in early childhood programs and environments of high quality (Thornburg & Mauzy, 2012). Moreover, a growing body of research has shown that child outcomes improve as a result from high-quality practices in early childhood educational environments (LoCasale-Crouch, Konold, Pianta, Howes, Burchinal, Bryant, Clifford, Early, & Barbarin, 2007). Generally, children that attend a high-quality early childhood program and environments are identified as being more "school ready" than their peers (LoCasale et al., 2007). In fact, the NICHD Study of Early Childhood Care

concluded that a young child's pre-academic and language skills were predicted based on the quality of care they receive (Cassidy, Hestenes, Hansen, Hegde, Shim, & Hestenes, 2005).

How to define quality education has been a highly prominent topic in the field of early childhood education. High quality can be demonstrated through the implementation of developmentally appropriate and best practices. Indicators of high quality include, but are not limited to, teacher-child ratio, class size, teacher credentials, spaciousness of facilities, amount of learning materials provided, type of care being provided, length of the preschool day, and cost of care (Pianta, 2007; Whitebrook, Howes, & Phillips, 1990). Moreover, according to Dr. Lillian Katz, high quality early childhood education fosters a love of learning, uses project-based curriculum, and builds social competency in young children (2011). Katz further argues that high quality early childhood education does not merely foster academic skills in young children; rather it fosters a lifelong disposition for learning and thirst for knowledge. Hence, educators are tasked with nurturing intellectual curiosity in young children rather than simply transmitting knowledge. She expands upon this notion by stating that although young children can acquire reading skills, unless they have a motivation to be readers, they may not use the skills they develop outside of what is required academically. Finally, Katz states that it is this development of the love of learning that separates low and high quality early childhood education programs.

It has also been argued that creating high quality early childhood education environments is not dependent on the amount of resources an early childhood environment has or has access to. Rather, high quality early childhood programs are created when educators implement thought-provoking project-based curriculum (Katz,

2011). According to Katz (2011) project-based curriculum enables children to work collaboratively, which builds social skills along with knowledge and other educational skills. During project-based learning, children investigate their environment and experiences through questioning, predictions, data collection, analysis, and drawing conclusions about their findings. It should be noted, that exploratory learning is an educational approach that implements project-based activities to foster knowledge and skills in young children. Additionally, researchers have argued that the interactive nature of project-based learning not only improves children's knowledge and social skills, it also yields better long term school participation (Katz, 2011).

High quality early childhood education improves a child's social competence (Katz, 2011). Social competence is an important skill for young children to acquire to be successful in educational environments. Research supports that if young children do not attain social competency by six years of age, it is increasingly harder to improve in later years of life.

Dr. Julie Bullard, the author of *Creating Environments for Learning: Birth to Age Eight* (2013) echoes Katz notions of high quality early childhood education. According to Bullard early childhood education setting should incorporate hands-on, developmentally appropriate materials and centers that allow children to actively learn (Flannery, 2012). Additionally, Bullard states that the role of the teacher is to engage in meaningful interactions with young children to foster their knowledge and skills (Flannery, 2012). Bullard also discusses how high quality early childhood education understand the importance of and establish reciprocal relationships with parents and families (Flannery, 2012).

Despite the breadth of research touting the importance of high-quality programs and environments, and their effects on child development, a lack of consensus exists in the field of education as to how exactly quality is defined. Definitions describing early childhood education quality have included proximal (curriculum, teacher and child interactions) and distal (program and state policies) features (La Paro, Thomason, Lower, Kintner-Duffy, & Cassidy, 2012). However, due to varying perspectives in the field regarding which proximal and distal features are most important when defining the quality of early childhood education, definitions are then broad and nonspecific (La Paro et al. , 2012). While Katz and Bullard prefaced their arguments on developmentally appropriate practice, other researchers and educators have based their conception of high quality on teacher qualifications and instructional quality. Therefore, quality is a term that is contextual, and the definition varies based on the context in which it is being used. For example, the quality of structured learning environments is defined differently from the quality of exploratory learning environments, for their guiding principles are different and conflicting.

The quality of early childhood education has also been a popular topic in international and United States political arenas in recent decades. The current President of the United States, Barack Obama, in his State of the Union Address on February 12, 2013, stated

“Study after study shows that the sooner a child begins learning, the better he or she does down the road. But today, fewer than 3 in 10 four year-olds are enrolled in a high-quality preschool program. Most middle-class parents can’t afford a few hundred bucks a week for private preschool. And for poor kids who need

help the most, this lack of access to preschool education can shadow them for the rest of their lives. Tonight, I propose working with states to make high-quality preschool available to every child in America. Every dollar we invest in high-quality early education can save more than seven dollars later on—by boosting graduation rates, reducing teen pregnancy, even reducing violent crime. ”

Prior to President Obama taking office, the No Child Left Behind Act of 2001 stressed accountability for early childhood educators to improve child outcomes, as well as emphasized the importance of quality practices in the classroom and quality classroom environments (La Paro, Pianta, & Stuhlman, 2004). The concerns stemmed from the troubling state of education across the nation. As a result, educators are now held more accountable for ensuring that they are meeting the needs of every learner and creating high-quality educational environments.

In the field of early childhood education, environmental quality refers to the experiences of young children within an educational environment that include their interactions with educators and peers, learning materials, and activities (Clifford, Reszka, & Rossbach, 2010). The environment of a high-quality classroom should be rich, stimulating, supportive of learning for young children, and exude respect so that children feel a sense of well-being and safety (Jalongo, Fennimore, Pattniak, Laverick, Brewster, & Mutuku, 2004). Exploratory learning environments aim to promote such high-quality practices. Yet, even with a more established definition of environmental quality, practices within the field of early childhood education are inconsistent. For instance, there is a lack of available information for families about services available and

differentiation in quality of environments and services (Schaack, Tarrant, Boller, & Tout, 2012; Traylor, 2012).

Empirical evidence has shown that early childhood teachers play an important role in creating high-quality educational environments for young children. Constructing and designing the educational environment is not a simple process. Rather, it requires that teachers comprehend their students' development and skill levels, strengths and weaknesses, interests, learning styles, and motivation to participate in various learning activities (Shipley, 2008). Hence, early childhood educators should not only be knowledgeable about how young children develop and about developmentally appropriate practices, but also be capable of implementing, assessing, continually improving, and maintaining, high-quality educational environments. Unfortunately, many early childhood educators do not have a clear understanding of what a high-quality early childhood educational environment is, nor how to assess one or implement changes to raise the quality of their classrooms.

Additionally, it has been purported that the educational environment is important to knowledge and skill acquisition. For instance, Lev Vygotsky's (1978) social learning theory theorized the importance of the learning environment as a platform for a child's growth and development. According to Vygotsky, young children learn to construct their own knowledge through meaningful interactions with the environment. Interactions of young children with peers and adults in a social environment aid in the facilitation of both cognitive growth and social skills.

Due to the increase in political activity surrounding early childhood education, many states across the United States of America have implemented quality improvement

initiatives regarding early childhood education. These initiatives often hinge on assessing classroom environmental quality through environmental rating scales. The results of environmental rating scales can be used to guide recommendations for professional development needs and incentivize practitioners to offer high-quality teaching (Setodji, Le, & Schaack, 2013). Often, these assessments are also used as the sole basis upon which programs receive funding.

Measurements of quality early childhood education. Several instruments are used to assess the environmental quality of early childhood classrooms. The Infant/Toddler Environmental Rating Scale-Revised (ITERS-R), Early Childhood Environmental Rating Scale-Revised (ECERS-R), and Classroom Assessment Scoring System (CLASS) are currently the most highly utilized assessments in the field of early childhood education for measuring environmental quality (Mathers, Linskey, Seddon, & Sylva, 2007; Setodji, Le, & Schaack, 2013; Snow & Van Hemel, 2008; Tout, Zaslow, Halle, & Forry, 2009). Other assessments include the Early Childhood Classroom Observation Measure (ECCOM; Stipek & Byler, 2004) and the Observational Record of the Caregiving Environment (OCRE; NICHD Early Child Care Research Network, 1996). The ITERS-R and ECERS-R have been used to assess the quality of early childhood programs in large-scale studies such as the National Child Care Staffing Study by Whitebook, Howes, and Phillips (1990), the Cost, Quality and Child Outcomes Study by Phillipsen, Burchinal, Howes, and Cryer (1997), and the program evaluations of Smart Start by Bryant, Maxwell, Taylor, Pow, Peisner-Feinberg, and Bernier (2003) (Mathers et al., 2007). The ITERS-R, ECERS-R, and CLASS assessments are discussed in more detail below.

Typically, environmental rating scales are implemented at the classroom level, with many of them focusing on the teacher (Chien, Howes, Burchinal, Pianta, Ritchie, Bryant, et al., 2010). In addition, assessments that evaluate environmental quality, such as the ones mentioned above, tend to either focus on either the educational context or child outcomes (Organization for Economic Co-operation and Development, 2004). Educational context oriented assessments examine factors such as the actions of the teacher, teaching methods, content and activities, and equipment and infrastructure. On the other hand, outcome orientated assessments evaluate whether the goals of the program were met. In the field of early childhood education, the most widely used assessments of environmental quality are educational-context oriented. These assessments will be discussed below.

ITERS. The Infant/Toddler Environment Rating Scale (ITERS) is a context oriented environmental rating scale that was originally created by Harms, Cryer, and Clifford in 1990 and revised in 2006 (ITERS-R). ITERS was revised based on newer research in the field of early childhood education, comparisons of ITERS with other assessment instruments geared towards similar age groups, and feedback from ITERS users and creators (Frank Porter Graham Child Development Institute, n. d.). The purpose of the ITERS-R is to assess the quality of center-based early childhood programs for infants and toddlers up to 30 months of age. The ITERS-R is composed of thirty-nine 7-point scaled items with indicators for 1 (*inadequate environmental quality*), 2-3 (*minimal environmental quality*), 4-5 (*good environmental quality*), and 6-7 (*excellent environmental quality*) (Harms, Cryer, & Clifford, 1990). The items are organized into

seven subscales which include *Space and Furnishings*, *Personal Care Routines*, *Listening and Talking*, *Activities*, *Interactions*, *Program Structure*, and *Parents and Staff*.

The ITERS-R can be utilized by learning center directors for the purposes of supervision and program improvement, by educators for self-assessment to improve their teaching practices, and by education agency members to monitor program progress. The reliability and validity scores of the ITERS-R scale are thought to make this instrument a fairly trustworthy measure for research and program evaluation in the field of early childhood education. Additionally, it is a widely used instrument to research the quality of early childhood classrooms and environments (Bisceglia, Perlman, Schaack, & Jenkins, 2009).

An indicator reliability level of 91.65% was given by raters. An item reliability level of 85% was given by raters and a Cohen's kappa inter-rater reliability of .58 was calculated for all 39 items. The internal consistency reliability of the ITERS-R was examined to determine the extent to which the full scale and the seven subscales measured the same concept. A Cronbach's alpha of .93 for the full scale score demonstrated internal consistency reliability, meaning that the scale questions are measuring the same thing. A Cronbach's alpha of .7 or higher is considered to be a good and acceptable level of internal consistency (Christensen, Burke Johnson, & Tumer, 2014). Thus the ITERS-R is considered to be a reliable assessment tool. We found no validity psychometrics could be found for the ITERS-R.

Although ITERS-R is considered to be a reliable, it has limitations. First, validity psychometrics have not been published for this environmental rating scale. Second, ITERS-R does not incorporate or measure all the interaction dimensions that infants and

toddlers experience each day (Thomason & La Paro, 2009, p. 288). Furthermore, the ITERS-R minimally measures instructional practices and quality of instruction. In addition, the administration of the ITERS-R in classrooms takes between four and five hours per assessment, limiting the use of this instrument (Bisceglia et al., 2009). A shorter version of the ITERS-R could be administered; however, this would affect and change the reliability of the instrument, although the reliability of the instrument may already be misleading. The reliability of the ITERS-R is misleading for a score of .58 is not considered to be a good Cohen's kappa inter-rater reliability. Reliability is considered to be good and acceptable when it is a score at or above .70 (Christensen, Burke Johnson, & Tumer, 2014). Reliability scores below .70 are not considered acceptable. Since inter-rater consistency is a type of reliability, the cut-off of .70 applies to the Cohen's kappa.

The redundancy of measuring one construct and construct underrepresentation should be concerning to the early childhood community, especially for programs who rely on assessment scores for funding and decision making. In a study conducted by Bisceglia, Perlman, Schaack, and Jenkins (2009), the researchers conducted an exploratory factor analysis of ITERS-R scores of 153 early childhood classrooms. The purpose of the study was to examine the associations among and between the full instrument and the subscales to predict quality. The ITERS-R is designed to measure seven distinct constructs of quality, and as such each construct should be correlated in low to modest ranges as to not measure the same construct. During their factor analysis of six constructs (Parents and Staff subscale was excluded) the researchers found that the correlation between the instrument items ranged between .38 and .68 with a median of

.50, while subscale correlations ranged between .48 to .66 with a median of .52. These ranges are considered to be moderate to high correlations. In addition, the internal consistency score for the ITERS-R as previously mentioned was determined to be .93 which suggests the instrument consistently measures one thing and not six. The researchers concluded through their factor analysis that instead of measuring six (Parents and Staff were excluded) distinct dimensions of quality, the ITERS-R items load onto a single factor, a unidimensional aspect of quality rather than multiple dimensions. These results suggest that the instrument truly only measures one general construct of quality rather than six different constructs of quality, leading to construct underrepresentation. Additionally, the results suggest “that different aspects of child-care quality cluster together so that providers who score high on one dimension are also likely to be strong in other areas” (Bisceglia, Perlman, Schaack, & Jenkins, 2009, p. 130). Moreover, the researchers concluded that the majority of the ITERS-R items measure physical aspects of the classroom, while fewer items measure process variables such as interactions. Interesting, the researchers also note that items such as “blocks,” “group plan activities,” “art,” and “water play” do not apply to classrooms with children younger than a specified age, although they did not identify what the specific age was. Consequently, an instrument that measures quality on distinct constructs should be developed, for quality in each construct may have varying definitions.

An additional limitation to the ITERS-R is that there are no indicated threshold set-points in literature. It is generally assumed and has been demonstrated in research that the better an educational environment’s score on the ITERS-R, the better child cognitive outcome will be. Although this is a reasonable assumption, it is also true that

there is a likely point where the relationship between the ITERS-R score and child cognitive outcomes levels begins and levels off. Perhaps the relationship between quality and cognitive gains is only linear within certain ranges, which is why it is important to ascertain the threshold set-points of the ITERS-R to truly understand the relationship between high-quality educational environments and child outcome (Setodji, Le, & Schaack, 2013).

Setodji, Le, and Schaack (2013) investigated threshold points for the ITERS. The purpose of the study was to identify the thresholds of the ITERS. The researchers utilized data from the Early Childhood Longitudinal Study, Birth Cohort. From the available sample, the researchers utilized data from 500 participants that were identified as child care center attendees. The results of the study indicated two threshold points on the ITERS. The first threshold point was a score of 3.8 on the ITERS which was the point on the quality continuum that needed to be reached prior to observable cognitive development in young children. The second threshold was a score of 4.6 on the ITERS which was the strongest point of impact on classroom quality. Hence, scores on the ITERS between 4.7 and 7.0 may not lead to noticeable differences in the cognitive growth of infants and toddlers. The researchers do warn, though, that the plateau effect is not a reason for practitioners to discontinue improving their educational practices and environments. Rather, the researchers suggest that the usefulness of the ITERS may be limited when it comes to measuring teacher-child interactions and cognitive development. The results of this study further lend support for the need of an additional assessment to measure quality in the field of early childhood education.

ECERS. Similar to the ITERS-R, the Early Childhood Environment Rating Scale (ECERS) is an environmental rating scale that was originally created by Harms, Cryer, and Clifford in 1980, and revised in 1998 (ECERS-R). The original ECERS was the first environmental rating scale and was designed to aid practitioners in making improvements to the educational environments of young children. ECERS was revised based on comparisons to other instruments that assessed global quality in early childhood environments, data from studies that used the ECERS, and feedback from ECERS users. However, the ECERS was also revised due to definition of program quality that is published in NAEYC's Developmentally Appropriate Practice that emphasizes the needs of the child. The purpose of the ECERS-R is to assess the quality of center-based early childhood programs based on the quality of teacher-child interactions for children 30 months to age 5. The ECERS-R is composed of forty-three 7-point scale items with indicators for 1 (*inadequate environmental quality*), 2-3 (*minimal environmental quality*), 4-5 (*good environmental quality*), and 6-7 (*excellent environmental quality*) (Harms, Cryer, & Clifford, 1980). The items are organized into seven subscales which include: Space and Furnishings, Personal Care Routines, Language-Reasoning, Activities, Interactions, Program Structure, and Parents and Staff. ECERS-R was translated into several other languages including German, Icelandic, Italian, Portuguese, Spanish, and Swedish and has been used in other countries for research and to improve early childhood practices (Mathers et al., 2007).

As with the ITERS-R, the ECERS-R can be utilized by learning center directors for the purposes of supervision and program improvement, by educators for self-assessment to improve their teaching practices, and by education agency members to

monitor program progress. Similarly to the ITERS-R, the reliability scores of the ECERS-R scale are thought to make this instrument a fairly trustworthy measure for research and program evaluation in the field of early childhood education. Additionally, it is the most widely used instrument to research the quality of early childhood classrooms and environments.

An inter-rater reliability level of 86.10% was given by the raters across the total amount of indicators. Interrater reliability refers to the likeness and agreement of independent raters when assigning scores. An interrater score of 80% or higher is considered to be appropriate. The internal consistency reliability of the ECERS-R was examined to determine the extent in which the full scale measured the same concept. A Cronbach's alpha of .92 was calculated, demonstrating a high level of internal consistency reliability. A Cronbach's alpha of .7 or higher is considered to be a good and acceptable level of internal consistency (Christensen et al., 2014). Thus the ECERS-R is considered to be highly reliable assessment tool by research method standards. In addition, the ECERS-R has been tested for current validity, described in research below.

Despite the fact that the ECERS-R is thought to be a reliable instrument regarding assessing the environmental quality of early childhood classrooms, recent research has demonstrated limitations to the instrument. It has been suggested that because the ECERS-R does not measure instructional practices more in depth, the ECERS-R scores can be misleading, causing some educators to focus on improving aspects of quality that most affect their scores rather than factors that are not assessed thoroughly (Denny, Hallam, & Homer, 2012). For example, Denny, Hallam, and Homer (2012) conducted a construct validity study with the purpose of assessing the quality of Tennessee early

childhood programs. The study participants included 114 early childhood programs. To conduct their research, the researchers utilized the ECERS-R, ECERS-E, and CLASS instruments. Data from participating classrooms were collected over a two-day period by trained assessors. On the first day, assessors utilized the ECERS-R, ECERS-E, or CLASS to rate their observed classroom. On the second day, assessors utilized one of the other instruments that were not selected on the first observation. Observation scores were then correlated and a multiple regression was run by the researchers to examine quality. The scores of participant classrooms on the three measures, ECERS-R, ECERS-E, and CLASS, were found to correlate, with the exception of the CLASS student engagement domain. In other words, when a classrooms scored high on one instrument, they typically scored high on the other two instruments as well. Yet, the researchers found that just because an individual classroom scored “good” on the ECERS-R dimensions did not necessarily mean the classroom also scored “good” on the ECERS-E or CLASS dimensions. In fact, Denny, Hallam, and Homer (2012) found that while classrooms had the tendency to score in the same direction, there were discrepancies between the final quality rating scores of the ECERS-R, ECERS-E, and CLASS. This was attributed to the fact that some dimensions of quality measured by these instruments scored higher than other dimensions. Additionally, the results of comparing the ECERS-R to the ECERS-E and CLASS instruments indicated that early childhood programs only score strongest in areas in which they are assessed. In other words, there may be aspects to quality not accessed via the ECERS-R, ECERS-E, or CLASS that are important and contribute to the quality of a program. Additionally, the researchers pointed out that “although the ECERS-R gives some information about the interactions and instructional practices that

are taking place in a classroom, it does not provide an in-depth analysis of these activities” (Denny et al., 2012, p. 692). Similar arguments have been echoed by other researchers that have found that the ECERS-R heavily focuses on features or variables of the classroom environment rather than processes (La Paro et al., 2004). Hence, the researchers suggest that the use of multiple quality measures are more likely to provide a better overall representation of classroom quality.

Similar to the ITERS-R, The ECERS-R has also been repeatedly shown in research to be reduced through factor analysis down to one or two constructs even though its intention is to measure seven distinct constructs of quality (Denny, Hallam, & Homer, 2012). Sakai, Whitebook, Wishard, and Howes (2003) conducted a study comparing the ECERS and the ECERS-R. The purpose of their study was to examine the extent to which ECERS and ECERS-R were equivalent in assessing quality and whether the ECERS-R remedied some of the weaknesses of the original instrument. Participants included 43 early childhood centers with 68 classrooms observed. Two trained assessors collected data from each classroom, one using the ECERS, and the other using the ECERS-R. The researchers concluded that the two versions of ECERS are comparable in terms of quality. However, the researchers also determined that the ECERS-R, like the ECERS, only assesses the quality of two constructs, rather than seven distinct constructs as the instrument is intended. In addition, the researchers found that even if a classroom scored poorly on the ECERS-R in terms of meeting the linguistic needs of children and parents, the overall rating could still be of high quality. In other words, a classroom could obtain an overall high quality rating, even though they were not achieving high quality scores in all of the items and constructs measured by the ECERS-R. They

thought this to be troubling and misleading, suggested supplementing the ECERS and ECERS-R with another instrument to obtain a better indication of the quality of a classroom. Thus, the overall reasoning was that the ECERS-R cannot stand alone as a comprehensive instrument that measures quality.

Similar findings have been echoed by research conducted by Pearlman, Zellman, and Le (2004). In their study, the researchers investigated the psychometric properties of the ECERS-R. The intent of the study was to gain information about the ECERS-R reliability, possibly giving insight for potentially constructing shorter versions. ECERS-R data was collected from 326 classrooms from 202 child care centers by trained assessors from the Center for Human Investigation Policy. The researchers conducted a factor analysis to verify that the ECERS-R measured seven distinct constructs of quality. Their findings determined that the ECERS-R constructs are highly correlated and as a result, quality is measured rather unidimensionally. Furthermore, Pearlman, Zellman, and Le conclude that due to the ECERS-R subscales being highly correlated, shorter versions could be constructed. The authors also warn that due to measuring quality unidimensionally, the ECERS-R should not be the sole instrument to base high-stakes policy decisions upon and that the ECERS-R should be used in conjunction with other measures of quality. The results of these studies have made researchers question whether the quality of an environment assessed by the ECERS-R is as thorough as previously perceived (Denny et al., 2012).

Cassidy, Hestenes, Hedge, Hestenes, and Mims (2005) also sought to investigate the psychometric properties of the ECERS-R, but with the use of a larger sample size to be able to conduct exploratory and confirmatory factory analysis. ECERS-R data was

collected by trained assessors from 1313 early childhood classrooms in child care programs. The researchers utilized three different exploratory factor analysis techniques and conducted three confirmatory factor analysis. The results of the study indicated that a shorter, 16 item ECERS-R could be an effective scale for assessing quality. The 16 items that the researchers identified to potentially synthesize a shorter version strongly correlated, $r = .90$, with the overall ECERS-R. Additionally, the 16 items loaded on the two quality constructs of the ECERS-R: Activities/Materials and Language/Interactions. The researchers suggest that further investigation should be conducted to determine whether the proposed 16 item ECERS-R would sufficiently “measure all dimensions of classroom quality that impact children’s development and later school success” (Cassidy, Hestenes, Hedge, Hestenes, & Mims, 2005, p. 359).

In another study by Cassidy, Hestenes, Hansen, Hegde, Shim, and Hestenes (2005), the researchers worked toward forming explicit definitions for *structure* and *process* for these terms to be generalizable for future empirical research. The researchers sought to do this, for it became apparent to them that the ECERS-R contained both structural and process dimensions of quality. While Cassidy et al. (2005) acknowledged that both structure and process measures of quality are important, they questioned “the contribution of each dimension to children’s development and well-being” (Cassidy et al., 2005, p. 515). Moreover, the researchers argued that it was important to define structure and process quality, for “the relationship between quality scores and child outcomes tend to be moderate at best” (Cassidy et al., 2005, p. 516).

In addition to the above discussed disadvantages, the administration of the full ECERS-R is rather time consuming, taking between four and five hours per assessment,

limiting the use of this instrument (Bisceglia et al., 2009). Moreover, due to the lengthy duration of this instrument, the ECERS-R is an expensive option for assessing program quality.

CLASS. The Classroom Assessment Scoring System (CLASS) is an educational context oriented assessment tool that was created in 2008 by Robert Pianta, Karen La Paro, and Bridget Hamre. CLASS is an assessment tool based on educational theory and designed to examine practitioner-child interactions in early childhood educational environments to assess program quality (Clifford et al., 2010). It was initially designed specifically for use in pre-kindergarten environments, but has since been expanded to be utilized with both older and younger-aged children. A total of six CLASS tools are available for use today.

Similarly to ITERS-R and ECERS-R, CLASS is an instrument that can aid early childhood practitioners. CLASS assessors are trained over a two day period where they are introduced to the dimensions of the assessment tool and practice scoring on the CLASS utilizing videotaped segments. CLASS differs from other instruments, more specifically the ITERS-R and ECERS-R, for it measures quality in terms of processes rather than variables or features of the environment (Hamre, Goffin, & Kraft-Sayre, 2009). Three domains on the scale measure interactions: emotional support (quality of interactions among children, peers, and educators, climate, educator sensitivity and responsiveness, and regard for student perspectives), classroom organization (behavior management, productivity, instructional formats), and instructional support (cognitive development, quality of feedback, language modeling, and literacy focus) (Hamre, et al., 2009). Each domain contains dimensions that assess the extent in which educators

support children's social and academic development. The scale is composed of ten dimensions in total. Some of the dimensions were adapted from the Observational Record of the Caregiving Environment (ORCE; Neonatal Research Network, 1996) and the Classroom Observation System (COS; National Center for Early Development & Learning, 1997), other assessment tools created prior to the CLASS that assess quality. Each dimension contains specific observable indicators. Scoring for the CLASS is conducted at the dimension level on a 7-point scale. The scores are 1-2 (*low range quality teacher-child interactions*), 3-5 (*middle range quality teacher-child interactions*), and 6-7 (*high range quality teacher-child interactions*) (Hamre et al., 2009).

The reliability and validity of the CLASS were determined during the pilot of the instrument in a study conducted by La Paro, Pianta, and Stuhlman (2004). CLASS was piloted utilizing 22 assessors. Interrater reliability was determined by ensuring all assessors were within one point from two assessors who served as the gold standard. The gold standard assessors had extensive experience with CLASS and served as leaders for trainings led by CLASS authors. The gold standard assessors had reliability with each other, a weighted kappa of .60. For their study, in order to be reliable, the remaining 20 assessors needed to achieve a weighted kappa of .60 or higher. Across all 22 assessors, the average weighted kappa was .65, with 83% of responses falling no more than one point away from the gold standard. These results signified that the instrument had good reliability. The validity was examined by comparing the dimension ratings of CLASS to ECERS subscales. Correlations ranged between $-.75$ to $.82$. Dimensions from the CLASS most strongly correlated with ECERS subscales of interactions and language and

reasoning, while lower correlations were demonstrated between CLASS and ECERS subscales of program structure, space and furnishing, and activities.

While the quality rating scores of the CLASS can differ from the ITERS-R and ECERS-R, as demonstrated by the research conducted by Denny, Hallam, and Homer (2012), there are areas in which the dimensions of the three assessment tools have some correlation and overlap. The overlap is demonstrated in Table 1, modified from Hamre, Goffin, and Kraft-Sayre (2009) below.

Table 1 Overlap between ITERS-R, ECERS-R, and CLASS at the Dimension Level

ITERS –R and ECERS-R Dimensions

CLASS Dimensions		Space and Furnishings	Personal Care Routines	Listening and Talking ^a	Language-Reasoning ^b	Activities	Interaction	Program Structure	Parents and Staff
	Positive Climate								
	Negative Climate								
	Teacher Sensitivity								
	Regard for Student Perspectives								
	Behavior Management								
	Productivity								
	Instructional Learning Formats								
	Concept Development								
	Quality of Feedback								
	Language and Modeling								

Note. Table adapted from: Harne, B. K., Goffin, S. G., & Kraft-Sayre, M. (2009). *Classroom assessment scoring system (CLASS) implementation guide: Measuring and improving classroom interactions in early childhood settings* and modified by the researcher to include the ITERS-R.

^aListening and Talking is a part of the ITERS-R only. ^bLanguage and Reasoning is a part of the ECERS-R only.



= minimal to no overlap



= some overlap

Despite this overlap, it is clear that the ITERS-R, ECERS-R, and CLASS do not measure the exact same dimensions of quality. Hamre, Goffin, and Kraft-Sayre (2009) noted that in some states, CLASS is only utilized within classrooms that meet a pre-determined ECERS-R score cut-off, although they did not state what this score was. However, Hamre, Goffin, and Kraft-Sayre (2009) advise against this practice, for they believe that regardless of ECERS-R scores, all educators can benefit from feedback to strengthen their practices. The overlap between the ITERS-R, ECERS-R and CLASS in Table 1 demonstrates that while ITERS-R, ECERS-R and CLASS are thought to be useful assessment tools on their own, utilizing CLASS in conjunction with ITERS-R or ECERS-R can capture elements not reflected on the ITERS-R or ECERS-R.

Additional limitations to current quality assessment tools. While tools such as ITERS-R, ECERS-R, and CLASS can be implemented within a classroom in conjunction with each other, this is a timely and costly process. In addition, “while researchers and policy-makers seem convinced of the positive effects of high quality child care...far less certainty [exists] about how to best measure the construct of *quality*” since current instruments as demonstrated above only measure certain constructs of quality (Cassidy et al., 2005, p. 506).

Moreover, despite the fact that the above discussed assessment tools, ITERS-R, ECERS-R, and CLASS, are widely used to determine the environmental quality of early childhood classrooms, these existing tools are geared towards measuring structured learning practices more than exploratory learning practices. This is important, for exploratory learning practices have increased in utilization in the past few decades. Moreover, programs that implement exploratory learning practices are still subject to

demonstrating high environmental quality in order to receive funding. Yet, since currently used scales do not accurately measure exploratory learning constructs, classrooms that implement exploratory learning constructs are more likely to receive a lower score, which is not a true reflection of their environmental quality. Therefore, a cost-effective and easy to implement assessment tool measuring the environmental quality of exploratory learning environments should be created.

Developmentally Appropriate Practice in Early Childhood Education

Developmentally appropriate and best practices have emerged from the combination of educational theory, most predominantly Piaget's (1936) theory of development, and empirical research. Developmentally appropriate and best practices outline the curricular approaches and instructional methods practitioners should implement with young children to aid their growth across all developmental domains (cognitive, social, emotional, and physical). Moreover, developmentally appropriate and best practices guide program structure, curriculum development, curriculum implementation, teacher classroom practices, classroom environment, professional development, and increase equal educational opportunities for all young children. In addition, consensus definitions of the concepts of developmentally appropriate practice ensure continuity and quality within the field.

One must remember that teachers play a significant role in most students' lives, and it is the role of early childhood educators to act as facilitators, guiding learning for all students (Nielsen, 2006). Teachers are expected to meet the needs of every learner and provide quality educational instruction and environments, especially as society is gradually becoming increasingly diverse and demands more accountability of educators.

Early childhood educators are responsible for ensuring each student “has the opportunity to experience success and learn according to individual needs, styles, and levels of ability” (Nielsen, 2006, p. 15). As such, the National Association for the Education of Young Children (NAEYC), has established developmentally appropriate practices for early childhood practitioners to implement with the intention of promoting quality education for each child to aid in their development during their forming years.

NAEYC is the world’s largest organization that specializes in and supports high-quality education for young children. The mission of NAEYC is to promote high-quality education for children birth to age 8, by connecting practice, policy, and research. Birth to age 8 have been datelined by educational theory and research as the most critical years in a child’s life, for during this time, the brain experiences the most development with children building motor, language, cognitive, and social skills that are essential for later life success. According to NAEYC, as outlined in the book *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth to Age 8* edited by Carol Copple and Sue Bredekamp (2009), developmentally appropriate practice requires early childhood educators to meet the needs of all of their students at each child’s age and level of development while enabling students to reach challenging yet achievable goals. In addition, developmentally appropriate practice is based on knowledge and not assumption. Such knowledge comes from research in the field of early childhood education as to how children’s brains and bodies develop.

NAEYC purports that a high-quality early childhood educational environment provides children with three basic needs: protecting children’s health and safety, developing positive relationships with teachers and peers, and creating learning

opportunities (Clifford, Reszeka, & Rossbach, 2010). To determine the quality of an early childhood education environment, environmental rating scales can be utilized as instruments for assessment. NAEYC also purports that there are three core considerations for developmentally appropriate practice: being knowledgeable about the process of child development and learning, knowing what is individually appropriate for each child, and knowing what is culturally important to each child's family (Coppie & Bredekamp, 2009). These practices are to be implemented to aid the growth of young children across all developmental domains (cognitive, social, emotional, and physical). By implementing developmentally appropriate and best practices, a teacher should be providing high-quality education to young children.

Although organizations like NAEYC have worked to develop clearer understanding in the field of early childhood education of what developmentally appropriate and best practices are for educating young children, not all educational environments implement such practices. Research has shown that the lack of consistency in implementing developmentally appropriate and best practices adds to the nation's problems in creating high-quality programs and environments (Kagan, 2012). More specifically, statistical analyses have indicated that the quality of early childhood education programs in the United States is widely varying and overall insufficient to promote high-quality learning and development experiences for young children (Karoly, Ghosh-Dastidar, Zellman, Perlman, & Fernyhough, 2008; Pianta, Barnett, Burchinal, & Thornburg, 2009). Therefore, it is important for educators to be knowledgeable about what developmentally appropriate practices are and how to create high-quality early childhood education environments.

Structured Learning

An alternative view to developmentally appropriate and best practices is that young children benefit from structured learning practices (Fowell & Lawton, 1992). Structured learning practices are different than exploratory learning practices. Structured learning, also known as teacher-directed practices, are steered by the teacher rather than being steered by the child.

The method of structured learning rose in popularity following the report *A Nation at Risk* (NCEE, 1983) which touted that America was falling behind in the information age and needed to change to remain globally competitive (Schwarzmueller & Rinaldo, 2013). The call for change led to an increase in political pressures for educators to improve student outcomes. These increased pressures to be effective led to “a downward shift in curriculum, with formal learning of math and reading skills” being emphasized in kindergarten (Marcon, 1999, p. 358). Therefore, an overemphasis on academic skills increased in American schools, increasing the use of pencil and paper activities in early childhood education, which left minimal room for exploratory learning practices such as unstructured play in schools (Lamme & Denny, 1981; Schwarzmueller & Rinaldo, 2013). As a result, the benefits of exploratory learning practices in early childhood education were minimized due to the pressures of politicians and parents to focus more on academic instruction even in the early schooling years (Schwarzmueller & Rinaldo, 2013). Unfortunately, in today’s society, the downward implementation of overly academic focused curriculum has affected pre-kindergarten programs and has now increased the concern of the demands being places on young children (Marcon, 1999).

In structured learning environments, education is formalized through the implementation of a daily action plan, created by the teacher (Fowell & Lawton, 1992). However, in some cases, the daily action plan is prescribed to teachers from their administration or district. In the daily action plan, which is more often referred to as the lesson plan, teachers outline the direct instruction that will be implemented. Furthermore, the lesson plan outlines the predetermined academic concepts and skills that will be taught on that day. Academic skills in these environments are generally taught to children through worksheet, drill, and other activities that are geared towards fostering literacy and numeracy skills. These skills tend to focus on recall rather than deeper understanding, and are taught in isolation, require that children provide correct answers, require that children regurgitate specific information relayed during direct instruction, or be able to apply a formula. Such learning also requires that learners act in a receptive role rather than an active role (Katz, 2003). Lesson plans can be based on themes such as animals, plants, and the community. When designing lesson plans, teachers take into account the duration, intensity, sequence, breadth, and depth in which to educate children (Fowell & Lawton, 1992). The purpose of structured learning practices is to establish a foundation of skills upon which further knowledge can be built.

Structured learning practices are criticized for being narrowly focused by being overly structured as they tend to stick to predetermined curriculum rather than following the lead of the child (Marcon, 1999). In addition, structured learning is criticized for implementing a larger amount of passive strategies where children engage in rote memorization and drill and kill activities when compared to exploratory learning (Fowell & Lawton, 1992; Katz, 2003). Hence, one of the primary criticisms for structured

learning practices is that the development of executive function and critical thinking skills is hampered due to the decreased implementation of self-directed learning and increased heteronomy (Manning et al., 2009). Moreover, structured learning activities have been criticized for impeding creativity in children by being overly scheduled and too academic-focused (Kim, 2011).

Exploratory Learning

Many of the concepts of developmentally appropriate and best practices are exemplified in exploratory learning, also known as discovery learning, inquiry-based learning, or constructivist learning. Exploratory learning is an inductive educational approach that places the child at the center of the educational environment and learning practices. Moreover, exploratory learning is a less-prescriptive educational approach in which “knowledge is constructed internally and individually by learners” (Dick, Carey, & Carey, 2009, p. 187). The concepts of exploratory learning have deep rooted history in psychology and education. The concept of exploration was inspired by Plato (399 BC), investigated further by behavioral biologists such as Darwin (1860), and later pioneered by psychologists such as Hall and Bruner (Gibson, 1988). Within the field of education, the roots of exploratory learning are traced back to constructivist views from educational theorists such as Froebel (1816), Dewey (1899), Montessori (1907), Piaget (1936), and Vygotsky (1978), who argued that the goal of early childhood education is to aid young children in constructing their own knowledge (Collins, 1996). These theorists stressed the importance of educational environments. More specifically, Froebel and Montessori believed that children learn from engaging in play, for through play-based activities, children are conducting work (Schwarzmueller & Rinaldo, 2013). Therefore, engaging in

play-based activities are educationally purposeful and individually meaningful to children. Piaget constructed the theory of cognitive development which purported that learning should be an active process that included interactions between the child and the environment (Gibson, 1988; Marcon, 1999; Piaget, 1962). Piaget also purported that in order for children to become confident in their abilities and active problem solvers, children need to be given opportunities by teachers to make their own decisions (Manning et al., 2009; Piaget, 1962). On the other hand, Vygotsky was a proponent of learning through social interaction. Vygotsky also believed that the role of the teacher was to scaffold a child's learning through meaningful interactions at their zone of proximal development (Bonawitz, Shafto, Gweon, Chang, Katz, & Shultz, 2009). Scaffolding is the process of offering children an adaptable support system during the learning process (Raes, Schellens, De Wever, & Vanderhoven, 2012). The concept of scaffolding was introduced by Wood, Bruner, and Ross (1976) who purported that people learn through one-on-one interactions. This idea was extended by Vygotsky's (1978) concept of the zone of proximal development in which teachers provides enough information and support through social interaction so that learners make progress on their own (Raes et al., 2012). When a teacher scaffolds, they demonstrate how to solve a problem. Furthermore, scaffolding is the act of aiding children to gradually master a skill that is just beyond the child's current capabilities. As children begin to master the new skill, teachers adjust their scaffolding and gradually transfer the responsibility of solving problems to the child (Sun & Roa, 2012). All of the above theories and ideas have culminated to shape exploratory learning in today's society.

Exploratory learning emphasizes the development of the whole child across all developmental domains. In addition, exploratory learning fosters metacognition, executive function, creative thinking, and critical thinking skills. This is important, for in particular, creative and critical thinking skills are in high demand by the work force. In fact, creative and critical thinking skills are believed to be imperative skills that encourage innovation.

Exploratory learning is a praised educational approach to implement with young children, for young children learn through spontaneous exploration and questioning their experiences with the people and objects around them (Bonawitz et al., 2009; Stone & Staley, 1997). Exploratory learning occurs when children lead their learning, combining the use of their senses with their experiences to form schemas and foster cognitive development (Stone & Staley, 1997). Exploratory learning is also founded in the principles that children are naturally inquisitive, and through their exploration of the environment around them, gain knowledge. Moreover, exploratory learning empowers children to be able to “produce their own learning context” (Freitas & Neumann, 2009, p. 351).

A breadth of research supports the notion that children learn best when they are given the opportunities to explore and investigate the environment around them. Unfortunately, more often than not, structured learning approaches to education halt the inquiry of the child by providing children with answers to their questions rather than allowing them to explore their interests. Instead, as exemplified in the quote by Maria Rilke, we should “learn to live and love the questions themselves rather than stopping them abruptly with answers” (Jalongo, 1999, p. 1). Research has also shown that

exploratory learning methods increase social interaction between children and their peers and teachers, positively affecting a child's development (Freitas & Neumann, 2009; Manning, Szecsi, Geiken, Van Meetersen, & Kato, 2009).

In an article written by Freitas and Neumann (2009), the authors discuss how exploratory learning gives children greater opportunities for learning by increasing control of practicing skills. Additionally, the authors note when children are given opportunities to explore and think abstractly, they are better able to retain information and become increasingly engaged in the learning process, which supports higher cognition (Freitas & Neumann, 2009). Freitas and Neumann (2009) also discuss how exploratory learning is cyclical. The cycle begins with the experiences lived by the child, leading to exploration through observations, interactions, and activities. As the children explore, they move into the reflection and forming stages where they gain knowledge. Finally, the child tests new knowledge in different situations, which brings the cycle back to experience (Freitas & Neumann, 2009). The authors argue that this cycle helps children to create self-reinforcement, which sustains their interests in exploration (Freitas & Neumann, 2009). Furthermore, in the exploratory learning educational approach, feedback to the child from the environment is immediate, which enables children to challenge themselves and form knowledge abstractly or symbolically, such as using objects to represent other things, as well as in terms of lived experiences such as home life and day to day contexts (Freitas & Neumann, 2009).

Exploratory learning environments also embrace the beauty of nature and seek to bring natural elements into the classroom, creating aesthetically pleasing classrooms. However, it should be noted that although these educational environments are beautiful,

welcoming, and nurturing, a beautiful environment does not equal a quality environment. Rather it is the implementation of several key constructs, discussed below, that create high quality exploratory learning environments.

Key constructs of exploratory learning. Although exploratory learning is implemented in slightly different ways by different programs and educational approaches, there are certain aspects, or key constructs, of the exploratory learning that are visible in every program and approach. The first key construct of exploratory learning methods is that the child is at the center of the curriculum: learning is child-directed. During exploratory learning, instead of being instructed on what to explore, children follow their own interests and the classroom curriculum emerges from child interests (Schwarzmueller & Rinaldo, 2013). According to Katz (2003) children have an inborn disposition to rationalize their observations, experiences, and emotions. While directing their own learning, children are only guided by the teacher occasionally to investigate and ask questions about their classroom environment and materials, rather than receiving direct instruction where the teacher explicitly explains concrete concepts (Marcon, 1999; Schwarzmueller & Rinaldo, 2013). Research supports that young children learn best through self-directed activities for children have a natural inclination to explore and inner drive to learn, (Schwarzmueller & Rinaldo, 2013). Thus exploratory learning is attention focusing for young children. The child having a sense of control is also important for when children feel control they are more engaged in the learning process and have ownership of their learning (Freitas & Neumann, 2009; Kampmann & Bowne, 2011; Schwarzmueller & Rinaldo, 2013). Additionally, there are many benefits of allowing children to direct their own learning including fostering important cognitive,

social, emotional, and physical development (Schwarzmueller & Rinaldo, 2013). By allowing children to act as leaders in the classroom, teachers also become more attuned with their students skill levels, strengths and weaknesses, needs, and interests to continue to foster development in the early years of life.

The second key construct is that the environment is set up intentionally by the teacher for exploration of a variety of materials. Teachers are tasked with creating intellectually engaging and responsive educational environments that promote the development of young children (Stuber, 2007). Intentional teaching is thoughtful, informed, and deliberate (The Early Years Learning Framework, 2010). This is important for greater learning occurs when teachers intentionally plan materials and activities to promote the growth of the child (Stuber, 2007). In exploratory learning environments, a variety of centers and activities are set up in ways that gives children the opportunities for open-ended exploration (Freitas & Neumann, 2009). Open-ended exploration supports children's passions and interests, increasing engagement, and provides children with numerous opportunities to learn (Kampmann & Bowne, 2011). As previously mentioned, the human brain experiences the most growth in the first years of life. Hence, the first years should include educational environments that are rich and safe, providing children with opportunities to explore, and discern cause-effect relationships (Katz, 2003).

With the third construct, children are able to form their knowledge through exploration. In exploratory learning environments educational materials have no absolute meaning; rather students interpret materials and construct meaning based on their prior knowledge and experiences (Dick, Carey, & Carey, 2009). Furthermore, in exploratory

learning environments, children are provided opportunities to explore, experiment, and manipulate materials around to construct further knowledge and representational thought (Bredekamp, Knuth, Kunesch, & Shulman, 1992). Material manipulation causes young children to observe what is occurring, think about and compare their findings, ask questions, and discover answers about the new information they have gained (Bredekamp et al., 1992). Moreover, as children explore, they are able to learn through trial and error which increases their mental dexterity, flexibility, and creativity (Schwarzmueller & Rinaldo, 2013). Through exploration, children are also given the opportunity to use their senses and lived experiences to think concretely such as recognizing numbers, and abstractly such as using a rolled-up piece of paper as a telescope, about the environment and materials around them. Early childhood educators aid young children in transitioning from concrete to abstract thought. To accomplish this, educators first ensure that children have first grasped the concept being explored using concrete hands-on materials (North American Montessori Center, 2008). The benefit of concrete learning materials are that they make concepts being explored by children real which increases the internalization of learning (North American Montessori Center, 2008). Once the concept is internalized, children can engage in abstract thought about the concept through pencil and paper (North American Montessori Center, 2008). An example of the movement from concrete to abstract thought is with the use of mathematic manipulatives to solve problems which later prepare young children to solve pencil and paper mathematics problems. However, moving from concrete to abstract thought does not just apply to mathematics. The use of hands-on activities provides practical life experience and also relates to other subjects including literacy and science (North American Montessori Center, 2008). Moving from

concrete to abstract thought through exploration also builds the skill of independence and concentration in young children (North American Montessori Center, 2008).

The fourth key construct is when the teacher acts as a curriculum maker as well as a guide, or facilitator, to scaffold children and their learning. In traditional classrooms, teachers are more often than not viewed as curriculum implementers; however, opposite this view, in exploratory learning teachers may also be seen as curriculum makers. The concept of a teacher as a curriculum maker emerged from works of Schwab and Tyler (1949) as well as Clandinin and Connelly (1992) in which the aforementioned authors described how teachers and students live out curriculum (Craig, 2012). More specifically, within the classroom teachers “live stories of practice” in which their pedagogical knowledge and skills are applied to foster the growth of their students (Clandinin & Connelly, 1998, p. 151). Furthermore, when teachers act as curriculum makers they are given the freedom and trust to implement instruction and educational activities influenced by the needs and interests of their own students rather than merely acting as a curriculum implementer, employing curriculum and activities designed by others including policymakers (Craig, 2009). In addition to student needs and interests, teachers make curriculum based upon their own knowledge and experiences. Similarly, when teachers acts as a guide, they do not provide children with direct instruction or answers, rather teachers model and demonstrate how to problem solve, and ask children provocative, focused questions to guide children in finding the answers to their questions on their own (Bredekamp et al., 1992; Hendrick & Weissman, 2009; Raes et al., 2012; Sun & Roa, 2012). By presenting materials in inviting manners and modeling exploration, teachers portray learning materials to students in a meaningful and more

memorable ways (Dick, Carey, & Carey, 2009). Additionally, modeling is more of a natural method of children to learn (Lamme & Denny, 1981). Through modeling and demonstration, children absorb important information (Lamme & Denny, 1981). For example, when a teacher demonstrates how to read and write, children learn that there is difference between letters and words that words have meaning, and that print is read from left to right (Lamme & Denny, 1981). Through exploratory learning, teachers are also able to form stronger relationships with their students, which enables them to individualize curriculum and scaffold student learning. Scaffolding enables children to practice skills at their individual level of achievement, progressing at their own developmental pace. When teachers act as scaffolds and guides, they also allow children to make constructive errors to learn from their mistakes (Bredekamp et al., 1992).

The fifth key construct is that the environment is rich in content for children to explore a variety of interests. Learning environments can either enhance or detract from a child's education (Reach Every Student, 2012). A rich environment enables children to apply learning experiences to life experiences and does so by incorporating relevant materials in an environment that is more realistic and replicates a child's home life (Dick, Carey, & Carey, 2009). Moreover a rich environment enhances learning by continually introducing children to new concepts and materials for children to explore in open-ended manners. Additionally, the richness of the environment enhances learning by increasing student choice and fostering student curiosity by being responsive to child interests (Reach Every Student, 2012). The entire environment in exploratory learning classrooms is not based on one theme, but rather an accumulation of several interests expressed by the children. Additionally, for early childhood education environments to be rich, they

should be well-supplied with a variety of materials. For example, a writing center in an exploratory classroom would contain not only pencils and paper it would contain different sizes, shapes, colors, and textures of paper along with a variety of writing utensils such as crayons, pencils, pencil crayons, and markers (Lamme & Denny, 1981). Exploratory learning environments are enriched by incorporating a variety of learning materials, and by frequently rotating and replacing materials used within the classroom.

The sixth construct of exploratory learning is that activities in the environment lead to socialization between children and teachers. Increased interaction between teachers and children provides teachers with a deeper understanding of what children are able to do and individual children's skill levels. In exploratory learning, activities should be able to be approached individually, or by groups of children to work as teams (Freitas & Neumann, 2009). When children explore their classroom environment, their conversations are less centered upon answers and instead shift toward discussions of processes and strategies (Reach Every Student, 2012). Moreover, when children interact socially, they are able to not only improve their social skills, but also metacognitive skill such as self-awareness, self-monitoring, and self-regulation (Mills, Cole, Jenkins, Dale, 2002; Reach Every Student, 2012; Schwarzmueeller & Rinaldo, 2013). Metacognition is best supported through environments that allow children to pursue their own learning goals (Dick, Carey, & Carey, 2009). The building of metacognition aids young children in controlling their impulses as well as improves anti-social behavior (Mills et al., 2002). Additionally, through social interactions, young children learn to work together cooperatively towards a common goal which improves their knowledge, understanding, and performance of skills (Ramani, 2012). Socialization also fosters a community of

learners. When children feel safe, they feel empowered and are more likely to explore new ideas (Reach Every Student, 2012). Additionally, children tend to take ownership and responsibility of their learning and the learning of their peers in learning environments that encourage socialization (Reach Every Student, 2012). Teachers in exploratory learning environments can encourage socialization by providing children opportunities to work in small groups as well as asking thought provoking questions that ignite conversation between children.

The seventh and last key construct is that children are given the opportunity to reflect on their learning. This includes being able to think abstractly about their learning within the classroom and home environments (Freitas & Neumann, 2009). Reflection is an important step for children to identify the next steps in to take in their learning process (Wright, n.d). When children reflect, they do not simply recall what they have done; children also become aware of the concepts they learned, what they found interesting, their feelings about their learning, and what they can further investigate (Epstein, 2003). Moreover, as a child reflects on their learning, teachers are able to better identify how to enhance the child's learning (Kampmann & Bowne, 2011). As children reflect, teachers can identify what skills and concepts a child has mastered, and how to scaffold them to a higher level of cognition. The process of reflection also fosters metacognition in young children which enables them to better problem-solve which is an important skill inside and outside of the classroom (Epstein, 2003). Reflection is also more than memorization; instead it is the act of remembering with analysis (Epstein, 2003). As such, when children reflect on their own learning, they are able to commit knowledge from their short term memory to their long term memory. The act of reflection also enables children

to create generalize the information they have learned to other situations, therefore leading to further exploration, predication, and evaluation (Epstein, 2003). Reflecting on their learning also demonstrates to young children that what they do is purposeful and what they think is of value (Carr, 2011). Moreover, reflection allows children to contribute to the documentation of their progress. In exploratory learning environments, teachers encourage young children to reflect by asking open-ended questions, making specific comments about a child's exploration which aids the child in remembering details, writing down what children say, and encouraging children to carry over activities to the next day (Epstein, 2003).

Exploratory learning educational approaches. Several educational approaches and classroom practices fall under the category of exploratory learning. Such approaches believe that the child is capable, and implementing child-directed educational methods that give the child the opportunity to guide their own learning. Three types of exploratory learning approaches will be discussed below.

The Montessori Method. The Montessori Method was created by Maria Montessori in Italy in 1907 (Klein, n.d.). Today, Montessori practices are used worldwide. The Montessori Method believes that the child learns best by doing and engaging their senses. Classrooms in the Montessori Method are broken into multiple age groups as opposed to the traditional age groups of early childhood and elementary education. These age groups are parent infant (0 to 3), preschool (3 to 6), lower elementary (6 to 9), upper elementary (9 to 12), and middle school (12 to 14) (North American Montessori Teachers' Association, 2015).

One of the differences in the Montessori Method from other early childhood education approaches is that materials are provided for children to engage in work rather than play, for Maria Montessori believed that “play is the child’s work” (Montessori, 1907). Therefore, the role of the teacher in the Montessori Method is that of an observer as well as a facilitator, connecting children with materials for them to engage in to perform their work and build knowledge. The types of materials the teacher provides in the classroom environment are didactic and self-correcting to enable the child to learn from their errors and correct themselves, rather than through teacher correction. For this reasoning, classrooms in the Montessori Method are set up to be home-like so that children are able to learn practical life lessons. The Montessori Method also supports strong relationships between the school and families.

Reggio Emilia educational approach. Reggio Emilia is an exploratory learning approach that began in the city of Reggio Emilia, Italy, in the 1940s following World War II. It focuses on high-quality preschool and primary education and was developed in collaboration by Loris Malaguzzi and parents in the city to better serve the needs of the children. The Reggio approach is continually evolving, yet was founded on the beliefs that during the early years of development, children form their own personality and that children are endowed with “a hundred languages.” Malaguzzi believed that richer educational experiences fostered motivation to inquire and learn by offering children a wide range of possibilities (Rivkin, 2014). Additionally, the Reggio Emilia educational approach has been influenced by educational theorists such as John Dewey, Jean Piaget, Lev Vygotsky, Howard Gardner, and Jerome Bruner, with the main contexts of the

Reggio Emilia educational approach stemming from their concepts about child development (Rivkin, 2014).

Reggio Emilia learning environments are considered to be high-quality, developmentally appropriate and best practices in the field of early childhood education. More specifically, the Reggio Emilia educational approach grew around essential elements which centered on the child and not the educator. Within the Reggio Emilia approach, the child is considered to be the protagonist, which means that the child is viewed as capable of forming and constructing new knowledge (Cadwell, 2003). Additionally, the child is viewed as a collaborator, capable of directing their own learning experiences with others rather than in isolation (Cadwell, 2003). Most importantly to the Reggio Emilia educational approach is that the curriculum is emergent, stemming from the interests displayed by the children rather than being pre-planned as with traditional education settings (Fleck, Leichtman, Pillemer, & Shanteler, 2013).

The Reggio Emilia approach is also based on the principles of respect, responsibility, and community through exploration and discovery in a supportive and enriching environment based on the interests of the children through a self-guided curriculum. As success was seen with this innovative educational approach, other cultures and countries took note. In recent decades, the United States has tried to create Reggio-inspired classrooms and schools, and some educators have strived to incorporate more Reggio inspired practices into their classrooms.

In the Reggio Emilia approach to education, the importance of a high-quality educational environment is stressed. In fact, the Reggio Emilia approach views the environment with such importance that it purports that the educational environment can

be considered to be the “third teacher.” That is to say that the environment can also be a teacher to the child. Bronfenbrenner (1979) popularized the concept of the bioecological model, which when applied to early childhood education would claim that the child affects the environment, and in turn the environment affects the child. One may ask how does the early childhood environment affect the child, support development, and teach the child? In young children, knowledge is gained through their experiences and senses. Hence, the educational environment provides content-rich feedback to children, allowing them to explore and learn from what is around them. Therefore, in the Reggio Emilia approach the learning environment is much more than visual stimuli; rather it can take on a life of its own and contribute to a child’s learning (Cadwell, 2003; Strong-Wilson & Ellis, 2007).

Fraser (2006) has identified eight Reggio Emilia principles that are vital to concept of the environment as a “third teacher.” These principles include classroom aesthetics, transparency between teachers and children, active learning, flexibility in learning content and strategies, collaboration between teachers and children, reciprocity, bringing the outdoors into the classroom, and the importance of relationships. These principles tie significantly to “how young children perceive and use space to create meaning” (Strong-Wilson & Ellis, 2007, p. 41).

Most importantly to the idea of the environment as the third teacher is the richness of the environment. The environment is to be beautiful, home-like, inviting, and foster inquiry (Mulqueen, n.d.). By creating an environment that has richness and meaning, educators also foster a respect and care for not only the educational environment and materials, but education itself.

HighScope. The HighScope educational approach was created by David Weikart in the United States in the 1970s and aligns with developmentally appropriate practices recommended by NAEYC. The HighScope educational approach is guided by the belief in active learning. Active learning is the idea that “children learn best through active experiences with people, materials, events, and ideas, rather than through direct teaching or sequenced exercise” (OECD, 2004, p. 8). As such, “children’s interests and choices are at the heart of the HighScope programs” (HighScope, 2015). Moreover, the HighScope educational belief supports the notion that children create their own knowledge from interactions and experiences with others and the environment. In the HighScope educational approach, the teacher’s role is to offer guidance and support, as well as to scaffold and expand children’s knowledge by offering rich environments and diverse materials. Similar to the Reggio Emilia educational approach, the HighScope educational approach assesses student progress through documentation including anecdotal notes. HighScope evaluates program quality through the use of the Preschool Program Quality Assessment (PQA) tool.

Differences between structured learning and exploratory learning. Both structured learning and exploratory learning aim to prepare young children to be school ready and foster skills in young children that will help them succeed as they progress through the education system. Additionally, both educational approaches view parents as important stakeholders and as partners in their child’s education. Yet, while there are the aforementioned similarities between structured learning and exploratory learning, there are clear differences between these approaches as demonstrated by the previous sections

outlining each educational approach. Table 2 below summarizes the differences between the practices of structured learning and exploratory learning.

Table 2 Similarities and Differences between Structured and Exploratory Learning

	Structured Learning	Exploratory Learning
Goal of Approach	Prepare young children to be school ready. The focus is on reading and writing skills	Prepare children to be school ready by aiding young children in constructing their own knowledge
Who Directs Learning	Teacher	Child
Role of Teacher	Provide direct instruction	Act as a facilitator and guide to scaffold learning
Methods of Instruction	Primarily whole group direct instruction and small group direct instruction	Teachers scaffold learners individually or in small groups at their zone of proximal development as they direct their own learning
Learning Environment	Typically thematic based. Materials in the classroom at learning centers are generally based on one concept or theme	Rich in context containing a variety of themes for children to explore based on interests they have expressed. Materials lead to open-ended exploration
Schedule	A daily schedule is used with specific times blocked for specific activities each day	While certain aspects of the day are routine such as snack and lunch, a daily schedule of activities typically is not utilized. Progression of classroom activities is more organic
Activities Implemented	Pre-determined activities designed to aid children in mastering a specific skill	Open-ended exploration of classroom materials
Assessment of Child Progress	Teacher conducts assessment of child progress through formative and summative evaluations	Teacher conducts assessment of child progress through documentation. This process includes the input of the child and parents. Children are provided the opportunity to reflect on their learning.
Role of the Parents	Stakeholder and partner in their child's education.	Stakeholder and partner in their child's education.

Assessing exploratory learning practices. Researchers have had a difficult time with measuring exploratory learning approaches using standardized assessments. For example, Rivkin (2014) recently conducted a study to quantify the level of adherence between Reggio-inspired programs in America with Reggio Emilia programs in Reggio Emilia, Italy. The researcher hypothesized that “there [would] be a variation of adherence for Reggio-inspired programs in the United States and their percentile scores will fall within a broad range” (Rivkin, 2014, p. 47). To conduct her research, Rivkin (2014) created and implemented a survey with 92 participants working in Reggio-inspired early childhood education environments which included 46 directors of early childhood programs, and 46 educators. Two different versions of the survey were created, one to version implemented with directors, the other with teachers. The director’s survey was 50 questions in length assessing seven constructs which included demographic information, environment, the project approach (*progettazione*), the role of symbolic language in the development of the child, documentation, the role of a teacher, and families and communities as partners. Educators’ surveys were 42 questions in length covering the same constructs. Both surveys also included open-ended, short answer, and multiple choice questions. Surveys were administered either online, or in hard copy.

Statistical analysis revealed that there was a wide variation of compliance, between 25% to 82% for directors, and 44% and 86% for educators regarding their adherence level to Reggio Emilia practices. Due to this wide variability, the results of the study determined that although programs or educators call themselves Reggio-inspired, “there are wide differences of how this approach is implemented and what elements are

introduced within the program” (Rivkin, 2014, p. 68). Additionally, Rivkin noted that it is difficult to find empirical research on one standardized tool to assess Reggio-inspired programs. Rivkin’s (2014) findings are important for they lend further support to the uniqueness of exploratory learning approaches such as the Reggio-inspired educational approach and how widely these practices vary in comparison to structured learning practices.

Instead of standardized assessments, exploratory learning practices are best assessed through authentic assessments including documentation rather than standardized assessments and environmental rating scales. An example of the successfulness of documentation can be seen in the Reggio Emilia educational approach. In Italy, Reggio Emilia learning practices, instructional quality, and program quality are assessed through pedagogical documentation rather than through standardized testing. Researchers who have investigated the Reggio Emilia educational approach have determined that child outcomes can be demonstrated in more ways than numerically (for example, through test scores) and cite that the Reggio Emilia practices are proof that a high-quality early childhood education program can exist outside of standardized assessments (Rivkin, 2014). Hence, documentation is viewed as integral to the Reggio Emilia educational approach. According to Loris Malaguzzi, the founder of the Reggio Emilia educational approach, “pedagogical documentation is a visible trace that captures what children did and said during interactions. It offers a tool for continuous reflection while making the learning process visible to teachers, parents, and members of the community” (MacDonald, 2007, p. 232). What makes pedagogical documentation different from other assessment methods is that it incorporates aspects of content and process

(MacDonald, 2007). A portfolio for each child is synthesized to include field notes, audio and video recordings, photographs, and examples of work. The portfolio then undergoes a process of continual revision by the child, teacher, and parents to promote reflection and dialogue on the learning and development that is being undertaken (MacDonald, 2007). From the knowledge gained through this partnered reflective process, a formative evaluation is created which aids in controlling the quality of Reggio Emilia practices and improving the overall program (MacDonald, 2007). Additionally, through the documentation process, assessment becomes more democratic, and the child and teacher can visibly see the value and meaning in the learning that took place (Dick, Carey, & Carey, 2009; Rinaldi, 2004). Therefore, in the Reggio Emilia educational approach, documenting is equated with assessing.

Despite documentation being the best method to gather a greater understanding of exploratory learning practices, this method is too cumbersome to be used as a standardized means of demonstrating the environmental quality of exploratory learning environments. Additionally, it is important to assess the environmental quality of exploratory learning classrooms in quantifiable manners. This is especially imperative as there has been a call to increase the harmonization of educational research with classroom practices (Buyusse, Sparkman, & Wesley, 2003). Furthermore, demonstrating the environmental quality of exploratory learning classrooms is essential for many programs need to demonstrate their quality and success in order to receive grants as well as federal, state, local, and private funding. Therefore, it is critical for early childhood educators to understand what components of exploratory learning environments are measured using environmental rating scales that are more geared toward assessing the

quality of structured learning environments. Unfortunately, little to no research or literature shows on how exploratory learning classrooms are assessed for environmental quality using environmental rating scales. Thus, the researcher created Table 3 below, that outlines the constructs that the three most widely used environmental rating scales, ITERS-R, ECERS-R, and CLASS measure or do not measure regarding exploratory learning key constructs.

Table 3 ITERS-R, ECERS-R, CLASS, and Exploratory Learning Constructs

Exploratory Learning Constructs		ITERS-R	ECERS-R	CLASS
	Learning is child-directed			
	Environment set up for exploration			
	Children form knowledge through exploration			
	Environment is rich			
	Teacher acts as facilitator			
	Activities lend to socialization			
	Children given opportunity to reflect on learning			

= not measured
 = measured

As the above table demonstrates, while social interactions are exploratory constructs measured by the ITERS-R, ECERS-R, and CLASS, other exploratory learning constructs such as learning being child-directed, environment set up for exploration, teacher as a facilitator, and children being given opportunities to reflect on learning are not measured. Constructs not measured by the ITERS-R, ECERS-R, and CLASS are imperative aspects of exploratory learning environments to measure to gain a full understanding of the quality of exploratory learning environments.

Summary

In the past few decades, the quality of early childhood education programs in the United States has increased in political and research focuses. Many states have implemented quality rating scales to assess early childhood education programs for their level of quality, specifically seeking to assess whether programs are of high quality. These environmental rating scales are more geared toward evaluating the quality of structured learning environments as opposed to exploratory learning environments. Yet, creating and maintaining high-quality programs are the goals in the field of early childhood education through the implementation of developmentally appropriate and best practices. Exploratory learning is an educational approach that is considered to be of high quality and implements developmentally appropriate and best practices. As exploratory learning practices such as the Reggio Emilia education approach gained esteem in the field of early childhood education, other countries, including the United States, have implemented exploratory learning methods to provide higher quality education to young children. However, one caveat of exploratory learning environments is that they are not adequately assessed by the most widely used quality rating scales. The three most widely utilized quality rating scales include the ITTERS-R, ECERS-R, and CLASS. As demonstrated in table 2, these assessments fail to assess key constructs of exploratory learning practices that are necessary to truly evaluate the quality of exploratory learning environments. Hence, the researcher's intent is to develop and implement an instrument that more adequately assesses the quality of exploratory learning environments based on the key constructs of exploratory learning practices.

Chapter III

Methodology

The aim of this research study is to design an observational measure or instrument, also known as an environmental rating scale that can be used to assess the environmental quality of prekindergarten exploratory learning environments. This chapter includes the research design that guides this study, the selection and description of participants, the procedures of data collection, the description of the instrument and the synthesis of the instrument, and explanation for how the data analysis will be conducted.

This study implemented a mixed methods research approach to synthesize the observational measure. Four research questions guided this study:

- 1) What are the best examples of each exploratory learning construct that an assessor should see when measuring a classroom?
- 2) What are the appropriate descriptors to describe the different ratings of an instrument?
- 3) What are the psychometric properties of a scale intended to assess the environmental quality of pre-kindergarten exploratory learning environments?
- 4) What are the results of a pilot instrument intended to assess the environmental quality of pre-kindergarten exploratory learning classrooms?

Rationale for Utilizing Mixed Methods

In recent years, mixed methods have gained popularity in the research field, particularly in the field of education (Collins, Onwuegbuzie, & Sutton, 2006; Creswell & Garrett, 2008; Heyvaert, Maes, & Onghena, 2013). Mixed methods is a research approach to collect and analyze data in which quantitative and qualitative methods are

both encouraged and mixed to investigate a topic (Collins et al. , 2006; Heyvaert et al. , 2013). Using a mixed methods approach, a researcher can obtain qualitative and quantitative data in a single study from research participants through questionnaires, observations, and interviews, synthesizing the data through a systematic review process (Heyvaert et al., 2013). Hence in the mixed methods approach, the qualitative and quantitative data complement each other (Gall, Gall, & Borg, 2003). Moreover, through mixed methods, researchers can draw from the strengths of qualitative and quantitative research approaches in a single study, thus minimizing the weaknesses of these approaches individually (Greene, 2007; Johnson & Onuwuegbuzie, 2004). For example, it has been purported that when researchers implement only one research method, they may overlook important data or evidence from the data (Pluye & Hong, 2014) However, the use of a mixed methods approach removes the limitations of a single approach of quantitative or qualitative methods (Gall et al. , 2003; Pluye & Hong, 2014). It has also been purported that the mixed method approach enables researchers to converge their findings (also known as triangulation), conduct more elaborate data analysis which provide richer data, and initiates new modes of thinking that emerge from the utilization of the qualitative and quantitative methods (Collins et al. , 2006).

Research Design

Before a cumulative environmental rating scale that equally measures structured learning and exploratory learning practices is synthesized, an environmental rating scale to measure the environmental quality of exploratory learning environments should be created. This study aims to create such an instrument that measures if exploratory learning practices are being implemented in pre-kindergarten classrooms. The research

for this study will be conducted in a bottom-up mixed methods approach where quantitative and qualitative research techniques are applied to collect and analyze data with the purpose of synthesizing an observational measure geared towards measuring the environmental quality of exploratory learning classrooms. As discussed in Chapter Two, existing environmental rating scales heavily measure structured learning practices and minimally measure exploratory learning practices. Thus, the researcher is constructing a new environmental rating scale that measures exploratory learning practices.

The environmental rating scale created by the researcher will be an observational scale. Observational scales in the field of education are instruments in which trained assessors observe intended subjects such as young children, teachers, or the classroom environment. While observing, assessors then rate their intended subject using the observational scale. Through observational scales, researchers can simultaneously assess multiple constructs while reducing obtrusion to study subjects (Ebersole & Armstrong, 2006). It should also be noted that within literature, environmental rating scales such as the ITERS-R, ECERS-R, and CLASS have been referred to as observational rating scales.

The researcher chose to construct an observational instrument that contains a summated scale rather than a self-report for an observational instrument is more reliable and accurate. Self-reports can provide researchers with misleading data, for when participants complete self-reports, they may be tempted to answer with socially desirable responses. In other words, respondents may anticipate what the researcher is seeking to discover rather than responding with truthful answers, therefore creating bias in the data results. Furthermore, it is important to remember that what teachers report on self-reports

and what practices they actually implement in the classroom can also be different. On the other hand, observational instruments are implemented by professional, trained assessors, which reduce the likelihood of biased data and increases interrater reliability. Good interrater reliability is .90 or higher to show that that all raters have a high correlation between their individual scores (Christensen et al., 2014).

Contrary to the format of current environmental rating scales, the researcher chose to construct an instrument that delineates the differences between the ratings of 1, 2, 3, 4, and 5 with annotated anchors. In other words, each rating value is described with an annotation, rather than using one descriptive word. The researcher chose to construct the new instrument in this method to increase the instrument's reliability. When an instrument delineates the differences between the ratings, it is more reliable, for it leaves little room for misinterpretation on behalf of the assessor. Moreover, due to the fact that there is a reduction in misinterpretation, there should be stronger interrater reliability. A higher interrater reliability gives evidence to the reliability of the measure, meaning that the measure is consistent. Figures 1.0 below is a sample of a rating scale with one word descriptors for ratings. Figure 2.0 below is an example of a rating scale with annotated anchors that delineate the differences between the scale ratings.

Figure 1 Sample Rating Scale without Annotated Anchors

		NONE OF THE TIME	A LITTLE OF THE TIME	MOST OF THE TIME	ALL OF THE TIME
1	Worked on tasks until they were finished.	1	2	3	4

Figure 1.0. "Measuring Elementary School Students Social and Emotional Skills: Providing Educators with Tools to Measure and Monitor Social and Emotional Skills that Lead to Academic Success" by Child Trends, 2014, *Child Trends publication #2014-37*. Copyright 2014 by Child Trends.

Figure 2 Sample Rating Scale with Annotated Anchors

Shared control: Teacher allows students some control over their learning processes and products.				
Level 1	Level 2	Level 3	Level 4	Level 5
Students have no choices about what tasks to do, where, and with whom; teacher calls on students to participate.	Activities are almost all teacher-directed and designed; student participation is partly volunteered and partly teacher-directed.	Teacher allows students choice about at least one of these aspects: what to work on, where, with whom, and participation level.	Teacher allows student choice about at least two of these aspects: what to work on, where, with whom, and participation level.	Teacher gives students opportunity to decide what to work on, where, and with whom; students decide on their participation level within teacher's constraints.

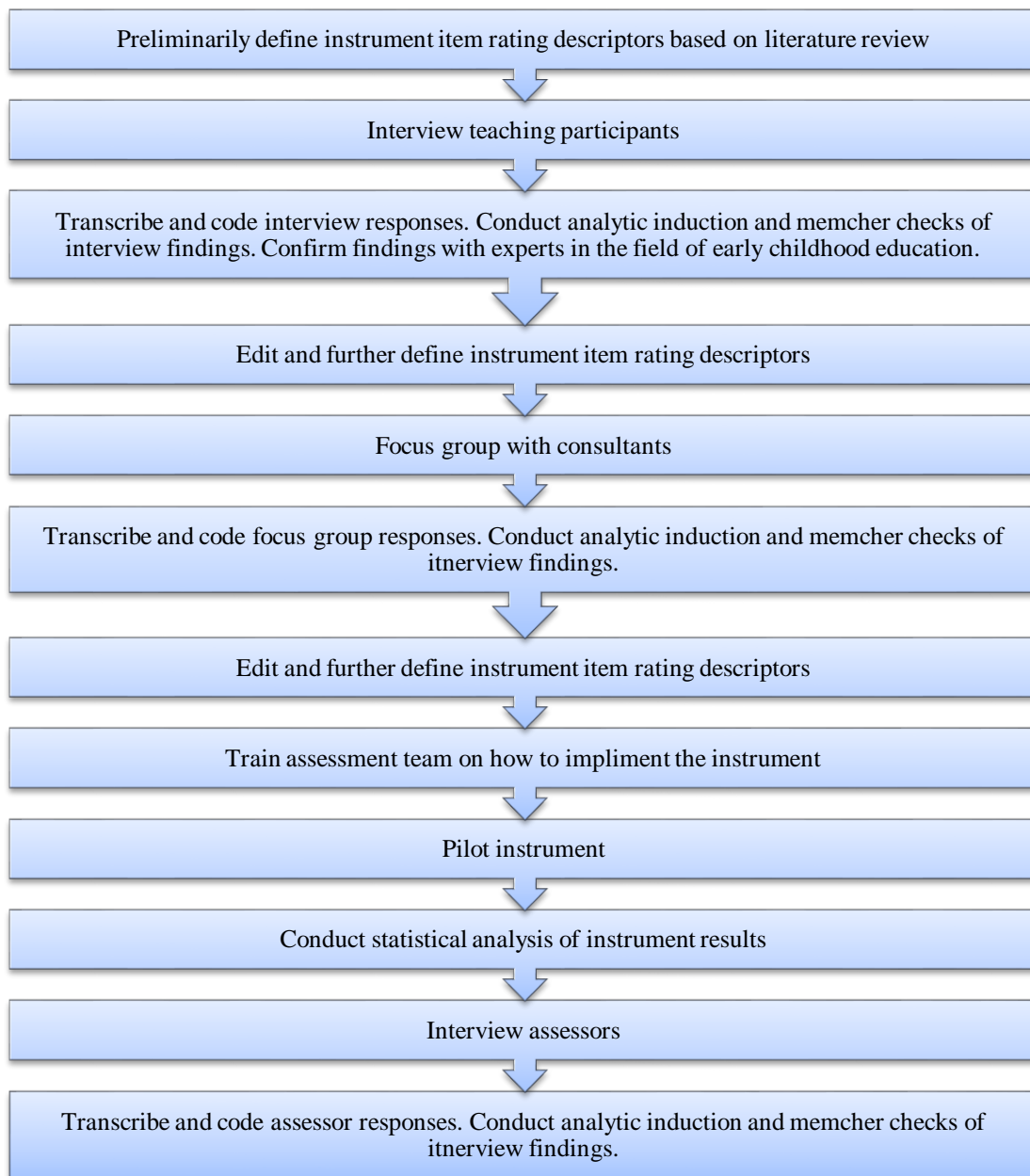
Figure 2.0. "Pearson Self-Regulation Learner Criteria" by Pearson, 2015. Copyright 2015 by Pearson.

Qualitatively, the researcher will conduct structured interviews with the study participant teachers who practice exploratory learning methods to investigate examples of exploratory learning practices. For this study the researcher will use an interview protocol, discussed below. By conducting interviews prior to the creation of the instrument, the researcher can avoid misrepresenting the key elements of exploratory practices. The information obtained in the interviews will be utilized to further develop the instrument, more particularly the instrument rating descriptors.

Upon completing the construction of a draft instrument, the researcher will conduct a focus group with consultants that aid teachers in their implement of exploratory learning practices. The researcher will establish a focus group protocol, to be discussed below. The purpose of the focus group is to have the consultants provide their feedback on the items included in the draft instrument and rating descriptors. Consultant feedback will be used to refine and edit the instrument. Additionally, the researcher will conduct interviews with the participant assessors, after they pilot the instrument to obtain feedback on its successes and flaws.

Quantitatively, the researcher will statistically compare the instrument to archival scores on ECERS-R from the participant teachers' classrooms. The researcher will also examine the internal consistency of the instrument. Figure 3.0 below outlines the steps the researcher will take to conduct this study.

Figure 3 Research Design



The research will be performed following the approval of the study summary and research protocol by the Committees for the Protection of the Human Subjects of the University of Houston.

Participants

Five early childhood educators from the UWBB program will be interviewed regarding exploratory learning practices. The sample was chosen based on availability of access to the researcher. Teachers to be interviewed will be selected by the UWBB professional development coordinator based on the teachers' knowledge of exploratory learning practices and ability to accurately describe exploratory learning practices to the researcher.

Additional participants will include five consultants from the UWBB program. Consultants are an integral aspect of the United Way Bright Beginning program. The consultants act as coaches to the UWBB staff, helping teachers improve their classroom practices and gain more pedagogical knowledge. In addition, the consultants act as mentors for new staff members guiding them to understanding the UWBB program. The consultants also conduct annual assessments of UWBB classrooms using the ITTERS-R, ECERS-R, and CLASS. The consultants of the UWBB program average over nine years of experience with the UWBB program and over twenty-four years of working in early childhood education. The five consultants also hold Bachelor's degrees.

The purpose of incorporating the consultants in a focus group is to obtain feedback on the item descriptors for the instrument. The sample was chosen based on availability of access to the researcher. The criteria of selection includes (1) consultant for the United Way Bright Beginning's program, (2) has aided in the implementation of

exploratory learning practices in pre-kindergarten classrooms, (3) speaks English fluently, and (4) voluntarily agreed to participate in the pilot study.

The pilot scale will be implemented with sixteen volunteer prekindergarten classrooms from the United Way Bright Beginning's learning centers based on a sample of convenience. The researcher chose sixteen prekindergarten classrooms to pilot the instrument with for Isaac and Michael (1995) and Hill (1998) recommend between ten to thirty participants for pilot research. United Way Bright Beginnings centers implement exploratory learning practices. United Way Bright Beginnings (UWBB) is a program that was created by United Way of Greater Houston and ExxonMobil in 2002. The UWBB program is an innovative early childhood education program aimed at aiding children from lower-income families in achieving social, emotional, physical, and cognitive milestones as well program participants' entering school ready to succeed. In addition, UWBB's aim is to strengthen the quality of child care and early childhood programs through staff training and leadership development to create competent and confident directors and teachers. In order to strengthen administrators and teachers, United Way Bright Beginnings provided quarterly professional development training. Trainings consisted of directors' and teachers' learning about Reggio-inspired classroom environments and practices, which have since been implemented within participating UWBB centers. As previously mentioned, Reggio-inspired practices are an exploratory learning educational approach.

The sample was chosen based on availability of access to the researcher. The criteria of selection include (1) classrooms are within a United Way Bright Beginning's participating center, (2) classrooms and teachers implement exploratory learning

practices such as Reggio-inspired practices, (3) classrooms are pre-kindergarten classrooms, (4) the teacher speaks English fluently, and (5) the teacher has voluntarily agreed to participate in the pilot study.

Teacher Interviews and Interview Protocol

Interviews are a qualitative method of collecting data from study participants. Data is obtained from study participants through interaction with the researcher. Thus, interviews provide researchers with dialogical data (Carspecken, 1996). In the interview, the researcher seeks to provide a safe environment in which participants feel encouraged to express their knowledge and experiences in their own words (Carspecken, 1996). Additionally, during the interview, the researcher acts as a guide whom facilitates the conversation through probing questions (Carspecken, 1996). Following interviews, researchers can conduct thematic content analysis, or analytic induction to draw conclusions about the data.

In preparation for the interview, the researcher will use the developed interview protocol which will guide the research. The interview protocol outlines what the researcher will address, ask, and discuss with the study participants. The interview protocol is rigid, meaning all participants will be asked the same questions. The content of the interview protocol will be based on the aim to derive common criteria for judging exploratory learning environments, to create the instrument. The interview protocol will contain demographic questions, and questions probing for educators to share their knowledge and experience regarding exploratory learning practices. The purposes of the interviews are to discuss examples of best practices in exploratory learning environments in order to delineate the differences between the instrument rating descriptors.

Participant interviews will be scheduled prior to the implementation of the instrument. Interviews will be administrated individually by the researcher in a private and quiet location over one or more sessions. Only the researcher will know the identities of the study participants. In order to secure the confidentiality of study participants, identifiers will be removed from any documentation and replaced with coding. Upon completion of the interviews, the interviews will be transcribed and coded for themes through analytic induction. The researcher will also implement member checks in which the participants can verify their interview results.

The Focus Group

A focus group, also known as a group interview, is a qualitative research method in which researchers collect data from multiple study participants in one interview session (Then, Rankin, & Ali, 2014). More specifically, focus groups bring together a group of four to twelve people with similar background and experiences for one to two hours to discuss a specific topic (Seal, Bogart, & Ehrhardt, 1998). Focus groups are not meant to be debate or educational sessions; rather, they are group interview sessions for participants to express ideas in their own words (Then et al., 2014). In focus groups, the researcher acts as a moderator to ensure that one participant is not dominating the conversation and that every participant has an equal opportunity to share their knowledge and experiences (Seal et al. , 1998).

Historically, focus groups have predominantly been used to conduct market research; however, focus groups have also been used in a variety of settings for conducting educational research and research in other fields. The conducting of focus groups is similar to that of individual interviews; however, in the focus group all

participants answer the probing questions posed by the researcher. Focus groups have the advantage of offering participants greater anonymity and enable participants to disclose information more freely, this producing richer data (Then et al., 2014). Other advantages of focus groups include that they are easier to administer, cost effective, and may produce information from participants more quickly than through individual interviews (Seal et al., 1998).

In preparation for the focus group, the researcher will use the developed focus group protocol which will guide the research. The focus group protocol outlines what the researcher will address, ask, and discuss with the focus group participants. The focus group protocol is rigid, meaning all participants will be asked the same questions. The content of the focus group protocol will be based on the aim to examine if the descriptors for the items on the instrument are accurate. The focus group protocol will contain demographic questions, and questions asking their feedback on the item pool and descriptors for the items created by the researcher.

The focus group will be scheduled prior to the implementation of the instrument. The focus group will be administrated by the researcher, at a public location over one session. Only the researcher will know the identities of the focus group participants. In order to secure the confidentiality of focus group participants, identifiers will be removed from any documentation and replaced with coding. Upon completion of the focus group, the interview will be transcribed and coded for themes through analytic induction. The researcher will also implement member checks in which the participants can verify the focus group results.

The Instrument

The researcher will create a pilot instrument that uses a 5 point rating scale with described anchors to evaluate the environmental quality of pre-kindergarten early childhood exploratory learning classrooms. The instrument will be an observational instrument that measures exploratory learning practices. The constructs of the instrument; will include the exploratory learning constructs discussed in the literature review which include the child is at the center of the curriculum: learning is child-directed, the environment is set up for exploration, children are able to form their knowledge through exploration, the teacher acts as a guide, the environment is rich, activities in the environment lend to socialization between children, and children are given the opportunity to reflect on their learning, as defined through the literature review

To construct the items and descriptions for the anchors of the instrument, the researcher will conduct interviews with eight early childhood educators that have been trained in exploratory learning practices and currently implement exploratory learning practices within their classrooms. To refine the item anchors, the researcher will conduct interviews with five early childhood education consultants that have expert knowledge and experience with exploratory learning environments and practices.

The instrument will aim to have a Cronbach's alpha of 0.70 or above (reflecting internal consistency) and a medium correlation of 0.50 with the ECERS-R scores (showing that the new scale measures both similar and different aspects of quality) (Christensen et al., 2014). A Cronbach's alpha of 0.70 or higher demonstrates good internal consistency. This means that the questions on the scale are measuring the same construct (Christensen et al., 2014). The researcher will evaluate the instruments

reliability by a Cronbach's alpha analysis utilizing IBM SPSS 23.0 software for Windows. The instrument will also aim to have a validity of 0.85 or higher (Christensen et al., 2014). This means that the instrument is accurate in its inferences and interpretations (Christensen et al., 2014). The study will evaluate the instruments validity through factor analysis utilizing IBM SPSS 23.0 software for Windows.

Data Collection

Teacher interviews. As previously mentioned, the researcher will begin collecting data through qualitative structured interviews with teaching participants. The interviews with the five participating classroom teachers are twenty-seven questions in length. Questions will include demographic information along with specific questions. Demographic information will include ethnicity, educational level, length of years of teaching experience in early childhood education, and length of months or years at their current center. Other questions to be asked specifically concern exploratory learning to obtain examples of exploratory learning practices to help the researcher construct the anchors for the instrument. A full list of teacher participant interview questions are listed as Appendix A. Interviews will be approximately one hour in duration with each classroom teacher at his or her convenience. Interviews will be conducted in one session or over several visits, depending on the availability, schedule, and preference of participants. Interviews will each be audio recorded and transcribed, with nonverbal behavior written and added to the typed audio transcriptions by the researcher. Additionally, participants will be asked for consent to conduct follow-up interviews over the phone or through email, as needed.

Focus group. Additionally, the researcher will conduct a structured focus group with three early childhood education consultants. The focus group will be asked sixteen questions including demographic information, specific questions regarding exploratory learning, and questions about the instrument item anchors. Demographic information will include ethnicity, educational level, length of years of being a consultant, and length of years working as a consultant for UWBB. A full list of focus group questions are listed as Appendix B. The focus group will be approximately sixty minutes in duration. The focus group will be conducted in one to two sessions. The focus group will each be audio recorded and transcribed, with nonverbal behavior written and added to the typed audio transcriptions by the researcher. Additionally, consultants will be asked for consent to conduct follow-up interviews over the phone or through email, as needed.

Pilot instrument. In order to obtain data on the implementation of the newly created scale, the researcher along with three trained assessors will pilot the instrument in sixteen pre-kindergarten classrooms. The assessors will be selected based on (1) early childhood education being their field, (2) knowledge of and/or experience with implementing early childhood assessments, and (3) being familiar with the researcher. The assessors will be trained by the researcher for a duration of two hours on how to utilize the instrument. Assessors will be trained utilizing pictures and videos of pre-kindergarten classrooms. The assessment team will seek an average correlation interrater reliability of .90 or higher to ensure consistency of implementation between the assessors (Christensen et al., 2014). It is important to have a high degree of interrater reliability to ensure the results of the pilot scale are accurate and will give useful and dependable data.

Assessor interviews. Structured interviews will also be conducted with the individual assessors. Interviews will seek assessors' opinions on the ease of use of the scale, difficulties in implementation, and suggestions for improvement. The researcher will conduct approximately hour-long interviews with each instrument assessor at his or her convenience. A full list of assessor interview questions is listed as Appendix C. Interviews will be conducted in one session or over several visits, depending on the availability, schedule, and preference of the assessors. Interviews will each be audio recorded and transcribed along with nonverbal actions written and added to the typed audio transcriptions. Additionally, participants will be asked for consent to conduct follow-up interviews over the phone or through email, as needed.

Data Analysis

Teacher interviews. Once interviews with early childhood teachers are conducted, the researcher will code interview responses and look for trends to aid in the development of the instrument. The manner in which interview data will be coded is through analytic induction, which is a process of three readings (Burnard, 1991). Themes identified in the data will be coded using color. A second peer debriefing reading will occur with a peer who was not involved in the data collection of the study. The peer will read the transcripts and identify themes. The researcher and the peer will discuss the themes they each found and come to a consensus on important themes. The researcher will then code the transcripts again for good measure. The researcher will conduct member checks and the findings from the interviews will be shared with the participants so that participants can verify the results and clarify any of the findings. Additionally, the themes found through data analysis will also be externally audited by someone with

expertise regarding exploratory learning for their endorsement of the themes identified in the interviews.

Experts are defined as people who have extensive skills and knowledge regarding a particular field (Happo, Maatta, & Uusiautti, 2013). Moreover, experts have a wealth of work experience, using their knowledge and professional ability in practice (Happo et al., 2013). In early childhood education, experts include academic researchers; however they also include consultants who are people that can provide well-informed testimony regarding early childhood education based on their depth of knowledge, experience, and skill regarding early childhood education. Consultants work interactively with early childhood educators to share their knowledge to better inform the educators practice. Moreover, consultants are coaches and mentors for educators who aid educators in problem-solving, helping teachers to further develop their knowledge base. Therefore, the researcher will have an early childhood education consultant with experience regarding exploratory learning environments and practices to externally audit the findings from the teaching participant interviews after the analytic indication is complete.

Responses from teachers' interviews will be used to answer the first research question, what are the best examples of each exploratory learning constructs that an assessor should see when measuring a classroom? Teacher responses will aid the researcher in determining instrument items as well as to compose the instrument anchors for each item.

Focus group. Once the focus group is conducted, the researcher will code focus group responses and look for trends to aid in the development of the anchors of the instrument. The manner in which the focus group data will be coded is similar to the

teacher interviews, through analytic induction. Additionally, in the focus group, each consultant will be provided a copy of the instrument with item anchors. The consultants will be instructed to mark their provided copies with an “x” for items that should be discarded. Consultants will also be instructed to write down suggestions for rewording item anchors next to the item being reviewed. The copies of the items will be returned to the researcher and the researcher will review the information from the consultants to refine the instrument.

Responses from consultant interviews will be used to answer the second research question, what are the appropriate descriptors to describe the different ratings of an instrument? Consultant responses and written feedback on the instrument will aid the researcher in better defining the anchors for each item within the instrument.

Pilot instrument. Once the instrument has been refined it will be piloted by a trained assessment team. Upon the completion of piloting the instrument, the researcher will analyze the instrument scale results by entering responses into IBM SPSS 23.0 software for Windows. In the SPSS 23.0 software, the researcher will run several data reports. The first report will be a descriptive statistics report. Descriptive statistics will provide the researcher with the mean, median, mode, standard deviation, and range of the scores. Descriptive statistics will be conducted initially for the whole dataset and, and then disaggregated by individual classrooms. The second report conducted in SPSS 23.0 software will be a factor analysis to examine the structure of the instrument. Factor Analysis is a data reduction technique used to reduce data from many, to fewer components that still have substantive meaning analyzes the items on the instrument in order to look for dimensions that are hidden. Items that group together in factor analysis

tend to exhibit high loadings on the same factor, demonstrating that the items are measuring or tapping into the same attitude or construct. It should also be noted that factor analysis is a preferred method for identifying reliability and validity of scales.

To examine the reliability of instrument, the researcher will look at the Cronbach's alpha. The Cronbach's alpha is a statistical analysis score that indicates the internal consistency of an instrument. A Cronbach's alpha of 0.70 or higher is considered to be good reliability, and therefore the instrument is reliable (Christensen et al., 2014). When an instrument is reliable, it is consistent in the constructs it measures. Additionally, a reliable instrument supports that the constructs of the instrument are grouping together in peoples' minds the way they are intended to.

The researcher will also compare the instrument created in this study to an existing environmental rating scale, the ECERS-R to determine concurrent and discriminant validity. The researcher will aim to find a moderate .50 correlation. The researcher would not seek for a high correlation of 0.85 or greater, for if the instrument has a high correlation with the ECERS-R, then the instrument would be too similar to the existing environmental rating scale, and therefore would also minimally measure exploratory learning practices which is not the purpose of the instrument. Therefore, for this study, the researcher would seek a .50 correlation for the instrument is designed to evaluate exploratory learning as opposed to structured learning. However, some constructs from both exploratory learning and structured learning overlap. Therefore, there should be a moderate correlation as opposed to low correlation. Additionally, a moderate correlation will demonstrate that there is enough difference between existing environmental rating scales and the instrument, therefore the instrument is contributing to

the field by closing an existing gap in the assessment of early childhood environmental quality.

The analysis of the pilot instrument will be used to answer the third and fourth research questions, what are the psychometric properties of a scale intended to assess the environmental quality of pre-kindergarten exploratory learning environments, and what are the results of a pilot instrument intended to assess the environmental quality of pre-kindergarten exploratory learning classrooms?

Assessor interviews. Finally, once the interviews are conducted with the assessors asking for their opinion on the ease of use of the scale, the research will code interview responses and look for trends in the difficulties of implementation and suggestions for improvement. The researcher will code the interviews with the assessors using an analytic induction process, as described above.

The assessor interviews will be used to answer the fourth research question, what are the results of a pilot instrument intended to assess the environmental quality of pre-kindergarten exploratory learning classrooms? Responses from assessors will aid the researcher in improving the scale for future studies.

Revisions to the Instrument

Upon the completion of a pilot study, the researcher may determine that the instrument needs to be revised for future research. Potential revisions may include the length of the scale, wording of scale descriptions or constructs, instructions for the scale, how assessors are trained to improve interrater reliability and ease of use, the order of scale items, and the format of the scale on paper. The findings of the study will guide

future development of the scale and further research into assessing environmental quality in various early childhood educational settings.

Summary

The researcher is conducting a mixed methods study, creating an environmental rating scale to assess the quality of exploratory learning environments. The instrument to be constructed will be a summated scale with annotated anchors. Furthermore, the instrument will be constructed based on information obtained from early childhood teacher interviews discussing best practices in exploratory learning environments. Teacher interviews will be transcribed and undergo analytic induction. The instrument will then be reviewed in a focus group with United Way Bright Beginnings consultants who are experts in the field of early childhood education and exploratory learning practices. The focus group, aimed at evaluating the instrument descriptors, will be transcribed and utilized to edit the instrument. Once the instrument is finalized, it will be piloted by trained assessors in sixteen pre-kindergarten classrooms in centers that implement exploratory learning practices. Following the implementation of the instrument, the assessors will be interviewed for the ease of use of the instrument. In addition, the instrument will undergo statistical analysis for reliability, validity, and factor analysis in IBM SPSS 23.0 software for Windows.

Chapter IV

Results

This chapter includes the results of the research methodology including data from the teacher interviews, the consultant focus group, the pilot instrument implementation, and assessor interviews. The purpose of this study was to design an observational instrument that can be used to assess the environmental quality of prekindergarten exploratory learning environments. In order to provide a more in-depth picture of exploratory learning practices, individual interviews were conducted with early childhood educators currently employed in exploratory learning environments. The results of the interviews were analyzed through a process of analytic induction. Additionally, a focus group was conducted with consultants who mentor early childhood educators in exploratory learning practices to verify interview findings and provide feedback on the draft instrument. Qualitative data from the teacher interviews and a consultant focus group provided information used to construct and edit the pilot instruments' scale items. The pilot instrument was implemented in a total of ten prekindergarten classrooms. Results of the pilot instrument were statistically analyzed with IBM SPSS 23.0 software for Windows. Furthermore, the perspectives of the trained assessors regarding the piloting of the instrument were explored using interview data. The results of assessor interviews were used to gain insight about how to improve the piloted instrument for future development and use.

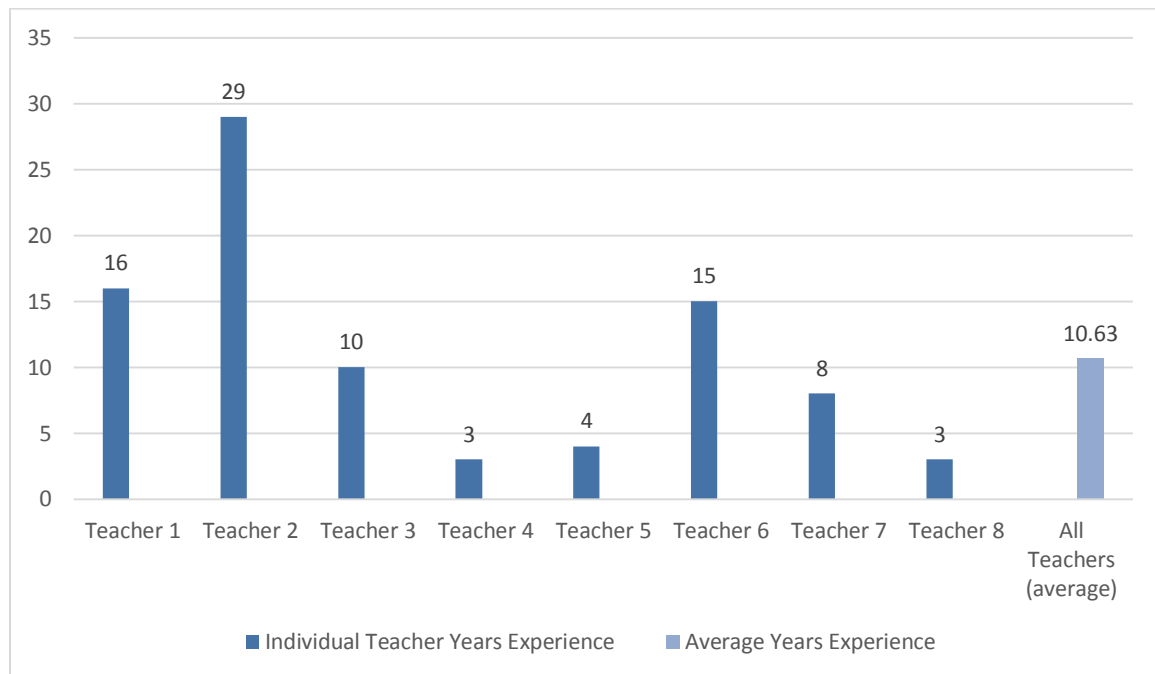
Teacher Interviews

Research question one examined the best examples of each exploratory learning construct that an assessor should see when measuring a classroom. To determine

examples of best practices in exploratory learning environments, the researcher interviewed early childhood educators currently practicing and well versed in exploratory learning practices. Teachers were asked a total of twenty-seven questions including seven demographic questions and twenty questions pertaining to exploratory learning practices. Upon completing the teacher interviews, the researcher conducted a process of descriptive statistics in IBM SPSS 23.0 software for Windows for the demographic data as well as analytic induction to determine themes from the interviews.

Teacher demographic data. Teachers interviewed were selected for this study based on a sample of convenience. Although the researcher intended to only interview five early childhood teachers, the researcher was able to interview three additional early childhood educators. Therefore, a total of eight, all female teachers, consisting of five Caucasians, two Hispanics, and one African American employed in United Way Bright Beginnings (UWBB) participating centers were individually interviewed. Interviews were held at each teacher's respective center lasting between fifteen and forty minutes, averaging twenty-three minutes in duration. Three of the teachers interviewed held bachelor's degrees, two held associate's degrees, and three held high school diplomas. All of the teachers who held high school diplomas also held the Child Development Associate Credential (CDA).

Additionally, all the years of each teacher's experience in the field of education were in early childhood education. Teachers' experience ranged between three to twenty-nine years, averaging 10.63 years of experience. Figure 4.0 below summarizes years of teaching experience.

Figure 4 Years of Teaching Experience

Teachers' duration of working at their current center ranged between one and a half to ten years, averaging 5.56 years. In addition, teachers' class sizes ranged between six to eighteen students, averaging 12 students.

Teacher interview analytic induction. During the interviews, teachers described exploratory learning practices and provided examples of implementing exploratory learning practices within their classrooms. The researcher audio recorded each interview and transcribed each interview into a table in Microsoft Excel 2010. Each teacher was assigned a code in order to keep teachers' identities confidential. Additionally, the researcher chose to organize the interviews into a table to be able to analyze each individual interview as well as cross reference interviews with each other to discover overarching themes. The researcher then conducted analytic induction using a hard copy of the transcripts. As part of the analytic induction, the researcher performed a

first reading coding by manually highlighting and making notes of insightful comments made by each teacher, as well as words that came up repeatedly in answers to interview questions. A second reading was completed by a University of Houston faculty member from the College of Education who has extensive experience with conducting research including analytic induction. The researcher and second reader also individually coded for ten main themes of the teacher interviews. During the third reading of the interview transcripts, the researcher compared the themes determined in the first and second readings. The first and second reader obtained 0.80 interrater reliability assessed as number of agreements over total number of judgments (hits/hits plus misses). As previously mentioned, a total of ten main themes were discovered including that learning is child-directed; teachers act as guides; material is naturalistic and relevant to young children; the classroom is inviting, home-like, and nurturing; the classroom is the children's space; learning is not thematic; children learn through exploring freely and engaging their senses; documentation is visible and aids in reflecting on learning; center directors are actively involved in classroom happenings and supportive; and assessment tools are not viewed as threatening but are incapable of capturing the entirety of the classroom in one observation period. The main themes were verified by the teachers interviewed through member checks. Additionally, the main themes of the teacher interviews were confirmed by the Collaborative for Children consultants in the focus group. Themes from the teacher interviews will be discussed in more detail in Chapter V.

Focus Group

Research question two was aimed at exploring appropriate descriptors to anchor the different ratings of an observational instrument. In order to determine these, the researcher conducted a focus group with consultants from Collaborative for Children who mentor teachers in the UWBB program. Collaborative for Children is a nonprofit organization founded in 2004 and based in Houston, Texas, that aims to strengthen early education in the Greater Houston area. In particular, Collaborative for Children focuses on improving quality early childhood education by increasing access and demand for quality programs. Since Collaborative for Children and UWBB seek to accomplish a mutual goal of providing high-quality early childhood education in the Greater Houston area, a partnership naturally and logically arose.

Focus group demographic data. The consultants were selected for this study based on a sample of convenience. At the time of the study, one consultant had left her position, and one consultant was unavailable to participate in the focus group. Hence, a total of three consultants, all female, participated in the focus group, one African American, one Caucasian, and one Hispanic. Each consultant held a bachelor's degree, with one consultant holding two bachelor's degrees. Additionally, the consultants averaged ten years of consulting experience and nine years of experience working with the United Way Bright Beginnings program. Although one consultant only had two years of experience in a consulting position, she was a former director for a UWBB center, working in that position for eight years; thus, she had extensive knowledge of the UWBB program and exploratory learning practices.

Focus group analytic induction. The focus group was conducted in one session for a period of one hour and ten minutes at the Collaborative for Children office in Houston, Texas. During the focus group, the consultants were asked a total of sixteen questions including four demographic questions, eleven questions discussing exploratory learning practices, and one question discussing the pilot instrument. The researcher audio recorded the focus group and transcribed the focus group into Microsoft Word 2010. Each consultant was assigned a code in order to keep their identities confidential. The researcher then conducted analytic induction in Microsoft Word 2010. A first reading conducted by the researcher was coded electronically by highlighting text and noting insightful comments made by the consultants. A University of Houston faculty member from the College of Education completed a second reading of the focus group transcript. Both readers also coded for five main themes of the focus group. During a third reading of the focus group transcript, the researcher compared the themes determined in the first and second readings. Based on agreements over total number of judgments (hits/hits plus misses), the first and second reader obtained 0.80 interrater reliability. As mentioned, a total of five main themes were discovered including that exploratory learning is a shared approach with input from teachers, children, parents and families, and the community; consultants approach their work as a partnership rather than an autocracy; the goal of exploratory learning is to prepare children for success in life; documentation is an important tool to make learning visible and provide evidence of children's developmental progress; and that high quality environments not only meet basic needs of all children, they also meet the individual needs of children. Consultant member checks verified the

main themes found through the analytic induction process. Themes from the focus group will be discussed in more detail in Chapter V.

Focus group instrument feedback. Along with providing additional information about exploratory learning practices, the consultants also provided the researcher with feedback on a draft of the instrument. During the focus group, each consultant was provided a copy of the draft instrument to read and revise as necessary. Consultants were given fifteen minutes to read through the draft instrument and make notes on questions or recommendations. After each consultant read through the instrument, the researcher and the consultants discussed aspects of the instrument that needed greater clarification including re-wording items, the consideration of splitting an item into two items, and the consideration of adding items. As the consultants provided their feedback, the researcher wrote notes on a draft version of the instrument. The researcher utilized these notes to reword one instrument item, make additions to two instrument items, as well as add one new instrument item. In addition, a University of Houston faculty member from the College of Education who is experienced in writing annotated anchors for Pearson Higher Education Publishing completed a review of a second draft version to examine item phraseology, instrument structure, and to make additional suggestions to refine the pilot instrument.

Pilot Instrument

As previously mentioned, research question two was aimed at exploring appropriate descriptors to describe the different ratings of an observational instrument. Research questions three and four were aimed at investigating the psychometric properties of an instrument as well as the results of piloting an instrument.

The researcher created a pilot instrument to measure the quality of exploratory learning environments based on the seven key constructs discussed in the literature review as well as based on the information obtained in the teacher interviews and focus group. The researcher based individual instrument items on the examples and feedback from the eight teachers and three consultants. The pilot instrument consisted of seven constructs: child is at the center of the curriculum; environment is set-up intentionally for exploration; children form knowledge through exploration; teacher acts as a guide/facilitator; environment is rich; activities lead to socialization; and children reflect on their learning. In addition, the pilot instrument was composed of 24 individual items. Each individual item included five annotated anchors in which assessors scored the prekindergarten classroom they were observing.

Trained assessors. Four assessors were trained to implement the pilot instrument. The assessors of this study were selected based on a sample of convenience. The assessors had extensive knowledge of early childhood education and were either pursuing or held a doctorate degree in early childhood education. Additionally, the assessors were trained by the researcher at the University of Houston in Farish Hall for a period of three hours. The training session educated the assessors as to what exploratory learning is, the key constructs of exploratory learning, differences between structured and exploratory learning classrooms and practices, understanding the pilot instrument including the annotated anchors, and applying the pilot instrument by watching videos of prekindergarten exploratory learning classrooms. During the training, the assessors obtained an interrater reliability of 0.90 (hits/hits plus misses). A hit was counted when all of the assessors scored an item within one point from each another. Alternatively, a

miss was counted when the assessors scored an item greater than one point from each other.

While four assessors were trained to use the pilot instrument, due to scheduling, one assessor was unable to implement the pilot instrument. Therefore a total of three assessors including two Caucasians and one Asian implemented the pilot instrument.

Pilot instrument results. A total of ten prekindergarten classrooms from five United Way Bright Beginnings (UWBB) participating centers were assessed using the pilot instrument. Table 4 summarizes the total number of classrooms observed at each center.

Table 4 Number of Classes Observed per Center

	Center 1	Center 2	Center 3	Center 4	Center 5
Number of classes observed at the center	2	4	1	1	2

The United Way Bright Beginnings program consists of seven tiers, reflecting the fact that participating centers joined the program at various times since the programs induction. The centers that participated in this study came from five of the programs tiers. Center one is a part of tier V and has been a member of the UWBB program since 2011 (five years). The second center has been with the program the longest of those that participated in the study as a member of UWBB since the program's inception in 2002 (fourteen years). Center three joined the UWBB program in 2014 (two years) as a part of tier VI. The fourth center is a part of tier III joining the program in 2007 (nine years).

Lastly, center five was one of the latest additions to the UWBB program joining tier VII in 2015 (one year).

Classrooms of the centers that participated in the study served between nine and twenty young children, averaging fourteen students. Table 5 summarizes the total number of students observed at each center.

Table 5 Number of Students per Classroom

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10
Number of students in class	13	15	15	15	14	20	15	9	9	11

Total pilot instrument scores from the ten prekindergarten classrooms ranged between 3.17 and 4.92 with an average of 4.07 (from a possible perfect score of 5).

Table 6 below summarizes the total score for each classroom assessed.

Table 6 Pilot Instrument Total Score per Classroom

	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10
Total Pilot Instrument Score	4.92	4.92	3.75	3.67	4.08	4.13	4.21	4.50	3.38	3.17

As previously mentioned, the average of the entire pilot instrument scores was 4.07. In addition, the median was 4.00, the mode was 5.00, the standard deviation was 1.12, and the range was 4.00. Table 7 below also summarizes the mean, median, mode, standard deviation, and range for each individual classroom pilot instrument scores.

Table 7 Individual Classrooms Mean, Median, Mode, Standard Deviation, and Range

	Mean	Median	Mode	Standard Deviation	Range
Class 1	4.92	5.00	5.00	0.282	1.00
Class 2	4.92	5.00	5.00	0.282	1.00
Class 3	3.75	4.00	4.00	0.85	3.00
Class 4	3.67	4.00	4.00	0.70	3.00
Class 5	4.09	4.00	4.00	0.83	3.00
Class 6	4.13	4.00	4.00	0.85	3.00
Class 7	4.21	5.00	5.00	1.18	4.00
Class 8	4.50	5.00	5.00	1.14	4.00
Class 9	3.38	3.50	5.00	1.38	4.00
Class 10	3.17	3.00	5.00	1.52	4.00

The mean, median, and mode scores of classes one through eight were closer to one another, meaning that the data are normally distributed. On the other hand, the mean, median, and mode of classes nine and ten were wider apart, meaning the data are not normally distributed; rather, the data in this case are slightly negatively skewed.

Similarly, the standard deviations of classes one through six were small in comparison to the mean; therefore, the aforementioned classes had a small deviation and the data are more closely clustered together. Conversely classes seven through ten had a large deviation in comparison to the mean, and therefore the data have a large deviation and are more spread apart.

Individual item scores ranged between the full extent of the scale, 1 and 5, and averaged a rating of 4. The first assessor's scores ranged between 4 and 5, averaging 4.92. The second assessor's scores ranged between 2 and 5, averaging 3.91. Finally, the third assessor's scores ranged between 1 and 5, averaging 3.81. Table 8 below

summarizes the average scores per item for each assessor as well as the average score per item based on all of the assessors' ratings.

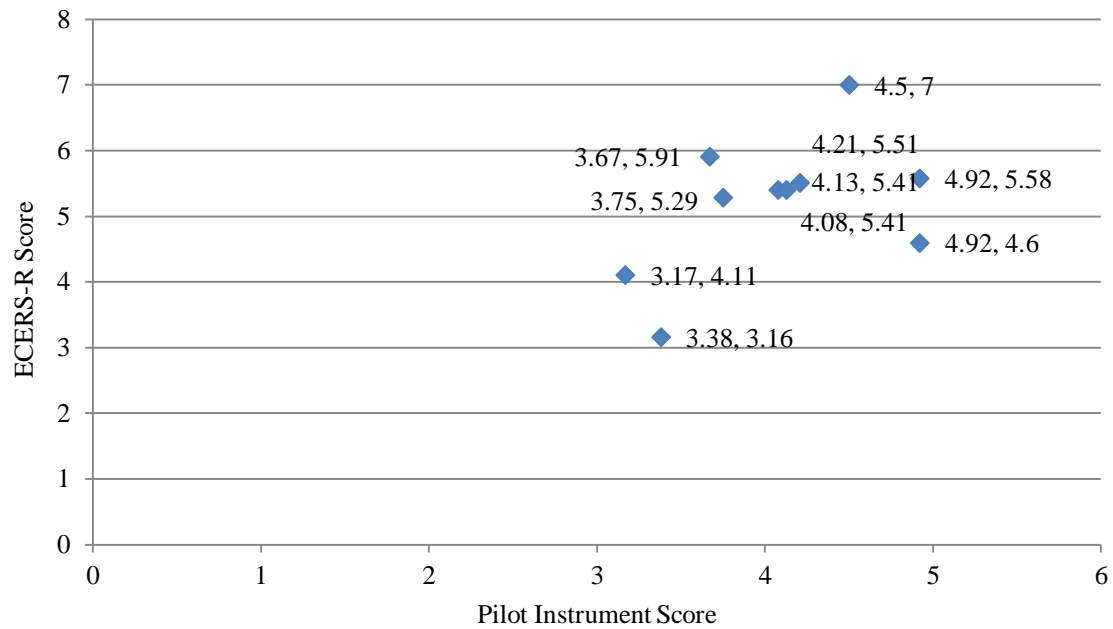
Table 8 Average Score per Item

Item	Assessor 1 Average Score	Assessor 2 Average Score	Assessor 3 Average Score	All Assessor Average Score
1	5.00	4.00	4.75	4.50
2	5.00	4.75	4.00	4.50
3	5.00	4.00	4.50	4.40
4	5.00	4.75	5.00	4.90
5	5.00	4.00	4.75	4.50
6	5.00	3.75	4.00	4.10
7	5.00	3.75	5.00	4.50
8	4.50	3.50	2.25	3.20
9	5.00	3.75	4.50	4.30
10	5.00	3.75	2.00	3.30
11	5.00	4.25	3.50	4.10
12	5.00	3.75	3.25	3.80
13	5.00	3.75	3.75	4.00
14	5.00	5.00	5.00	5.00
15	5.00	3.75	3.00	3.70
16	4.50	4.50	5.00	4.70
17	4.50	4.00	3.75	4.00
18	5.00	4.00	3.25	3.90
19	5.00	4.75	5.00	4.90
20	5.00	4.75	5.00	4.90
21	5.00	4.00	3.75	4.10
22	4.50	2.25	2.25	2.70
23	5.00	3.00	1.50	2.80
24	5.00	2.00	2.75	2.90

Pilot instrument reliability and validity. The reliability of the pilot instrument was assessed through a Cronbach's alpha analysis utilizing IBM SPSS 23.0 software for Windows. The statistical analysis concluded that the Cronbach's alpha for the pilot instrument was 0.934 reflecting excellent internal consistency (DeVellis, 2012). The researcher aimed to achieve a Cronbach's alpha of 0.70 or higher which demonstrates

good internal consistency. The pilot instruments Cronbach's alpha score of 0.934 demonstrates that while a high majority of the items on the pilot instrument were measuring the same construct of quality of exploratory learning environments, a few items of the pilot instrument were not measuring the same construct, or assessors were interpreting certain items in different ways (Christensen et al., 2014).

The validity of the pilot instrument was assessed through comparing the participating classrooms' most recent ECERS-R scores to the pilot instrument scores. ECERS-R scores for classrooms one through eight were from 2014, while ECERS-R scores for classrooms nine and ten were from 2016. The mean of the ECERS-R scores was 5.20 based on a 7 point scale, with high scores representing better qualities. All pilot instrument scores were obtained in 2016. A bivariate correlation analysis was conducted in IBM SPSS 23.0 software for Windows resulting in a Pearson correlation coefficient (r) of 0.486, indicating that there was a moderate positive relationship between the participants' total ECERS-R scores and the pilot instrument total scores. The p value (significance) was 0.154, indicating that the results of the bivariate correlation analysis are not statistically significant. Figure 5 below summarizes the participating classrooms ECERS-R and pilot instrument total scores.

Figure 5 ECERS-R and Pilot Instrument Total Scores per Class

Note. ECERS-R is a 7 point scale while the pilot instrument is a 5 point scale.

Assessor Interviews

As previously mentioned, research question four was aimed at exploring the results of piloting an observational instrument in pre-kindergarten environments. In order to explore the aforementioned question, the researcher conducted interviews with the assessors following the implementation of the pilot instrument to discuss the ease of use of the instrument as well as considerations and recommendations to improve the instrument. Assessors were asked a total of twelve questions including two demographic questions and ten questions pertaining to the implementation of the pilot instrument.

Assessor demographic data. While three assessors implemented the pilot instrument, the assessors included the researcher. Therefore, two assessors, one Caucasian man and one Asian woman, participated in the assessor interviews. Interviews

were held at the University of Houston in Farish Hall lasting between six minutes and ten minutes, averaging eight minutes in duration. One of the assessors interviewed held a doctorate degree, while the other assessor was pursuing a doctorate degree and held a master's degree.

Assessor interview analytic induction. During the interviews, assessors discussed the implementation of the pilot instrument including the ease of use, difficulties with implementation, and recommendations for edits. The researcher audio recorded each interview and transcribed each interview into Microsoft Word 2010. Each assessor was assigned a code in order to keep their identities confidential. Analytic induction of the interviews was conducted in Microsoft Word 2010. A first reading conducted by the researcher was coded electronically by highlighting text and noting insightful comments made the assessors. A University of Houston faculty member from the College of Education completed a second reading of the focus group transcript. Both readers also coded for five main themes of the assessor interviews. During a third reading of the assessor interview transcripts, the researcher compared the themes determined in the first and second readings. Based on agreements over total number of judgments (hits/hits plus misses), the first and second reader obtained 0.80 interrater reliability. As mentioned, a total of five main themes were discovered including that there was an overall liking of the instrument and that the instrument constructs were clear and concise; there was some confusion about whether to look for quantity or quality; descriptors aided in ratings (however, distinguishing between 4 and 5 was difficult at times); parent contributions to documentation may be an aspect of the instrument to remove; and that assessors should only score what they see and not what they are told. Assessor member checks verified

the main themes found through the analytic induction process. Themes from the assessor interviews will be discussed in more detail in Chapter V.

Summary

Interviews were conducted with eight early childhood educators about the best exploratory learning practices including examples. Interviews were transcribed and underwent analytic induction to determine ten main themes. The themes from the teacher interviews included that learning is child-directed; teachers act as guides; material is naturalistic and relevant to young children; the classroom is inviting, home-like, and nurturing; the classroom is the children's space; learning is not thematic; children learn through exploring freely and engaging their senses; documentation is visible and aids in reflecting on learning; center directors are actively involved in classroom happenings and supportive; and assessment tools are not viewed as threatening but are not able to capture the entirety of the classroom in one observation period. Findings from the interviews were used to construct a draft of the pilot instrument for this study.

Additionally, a focus group with three consultants was conducted to apply and evaluate appropriate anchor descriptors for the pilot instrument. Focus group transcripts also underwent analytic induction to determine five main themes which included that exploratory learning is a shared approach with input from teachers, children, parents and families, and the community; consultants approach their work as a partnership rather than an autocracy; the goal of exploratory learning is to prepare children for success in life; documentation is an important tool to make learning visible and provide evidence of children's developmental progress; and that high quality environments not only meet

basic needs of all children, they also meet the individual needs of children. Findings from the focus group were used to revise and edit the pilot instrument.

Following the focus group, the pilot instrument was then implemented in ten prekindergarten classrooms in five participating United Way Bright Beginnings centers by three trained assessors. Scores from the ten prekindergarten classrooms ranged between 3.17 and 4.92 with an average of 4.07. The pilot instrument obtained a Cronbach's alpha of 0.934 indicating excellent internal consistency and a Pearson's correlation coefficient (r) of 0.486, indicating that there was a moderate positive relationship between the participants' total ECERS-R scores and the pilot instrument total scores.

Assessor interviews were also conducted to discuss the ease of use of the pilot instrument as well as recommendations for future revisions. Analytic induction was conducted to determine five main themes from the assessor interviews. The five themes included that there was an overall liking of the pilot instrument and that the instrument constructs were clear and concise; there was some confusion whether to look for quantity or quality; descriptors aided in ratings (however, distinguishing between 4 and 5 was difficult at times); parent contributions to documentation may be an aspect of the instrument to remove; and that assessors should only score what they see and not what they are told. Findings from the assessor interviews were used to make future research recommendations.

The multiple levels of results from scale development and piloting will be discussed with interpretation in Chapter V.

Chapter V

Discussion

This study used a mixed methods, bottom-up approach to research exploratory learning environments and create a pilot instrument, entitled the Rutter Exploratory Learning Environmental Rating Scale (RELERS) designed to measure the quality of exploratory learning environments. The combined use of quantitative and qualitative approaches provided a deeper exploration and broadened understanding of the four research questions in this study. This study included eight early childhood educators from the United Way Bright Beginnings (UWBB) program, three consultants from Collaborative for Children, three trained pilot instrument assessors, and ten prekindergarten classrooms from five UWBB participating centers. This chapter begins with a summary of the findings from this study based on the study questions. Additionally, this chapter discusses the limitations of this study in terms of generalization of the findings to a broader audience, as well as recommendations for future research. This chapter concludes with final thoughts about this study and implications for policy and practice.

Study Findings

Research question one. The first research question of this study explored the best examples of each exploratory learning construct that an assessor should see when measuring a classroom. The eight early childhood educators interviewed discussed broad concepts of exploratory learning as well as specific examples of practices implemented in exploratory learning classrooms. The interview responses from the teachers were consistent with the key constructs of exploratory learning that were discussed in the

literature review of this study in Chapter II. Analytic induction of the interview transcripts revealed ten main themes.

The first main theme was that curriculum in exploratory learning environments is child led and that teachers follow the interest of the child, incorporating child interests into the classroom to provoke inquiry which expands learning. Teachers provided explicit examples of incorporating child interests into the classroom. Specifically, one teacher discussed how children became enamored with the construction of a gazebo on their campus. Due to the children's interest in the process of construction, the teachers then incorporated a variety of building materials into the classroom including real nails and hammers, and also brought informative materials such as books on construction and architecture into the classroom. Theme one directly correlated to the first and fourth key constructs of exploratory learning which are the child is at the center of the curriculum: learning is child-directed, and the teacher acts as a guide, or facilitator, to scaffold children and their learning respectively.

The second theme was that teacher acts as observer and guide, moving throughout the classroom, placing invitations at centers to provoke exploration, and asking questions as students explore. One teacher discussed how an invitation was set out for children to explore ribbon in her classroom, yet one child began counting the ribbon spools and using the ribbon spools as imaginary binoculars. Through this observation, the teacher was able to note the child's other learning interests as well as the cognitive development that was occurring. Another teacher discussed how she placed an invitation at a center for children to explore clay. She explained how she then extended the experience by inviting children to explore art tools on the following day, later evolving the exploration

invitation to incorporate both clay and tools. Theme two directly correlated to the fourth key construct of exploratory learning: the teacher acts as a guide, or facilitator, to scaffold children and their learning.

Theme three revealed that teachers in exploratory learning environments use realistic materials such as items that are natural and found in the world versus plastic and fake objects. For example teachers discussed using real leaves, twigs, buttons, nails and screws, glass, flowers, and other materials versus plastic materials often found in toy stores. Expanding upon this, teachers discussed in their interviews that they felt that children engaged better in learning experiences “when they are exposed to real things,” when the materials are relevant, and when materials have purpose and are open-ended. Teachers made it clear that “every material in the classroom has a purpose” and that “there shouldn’t be anything that only has one purpose or ‘rules’ of how to play with it.” Moreover, the teachers stated that classroom materials should be at the child’s physical level and available for exploration. Theme three directly correlated to exploratory learning key constructs two and five, which are the environment is set up intentionally by the teacher for exploration of a variety of materials, and the environment is rich in content for children to explore a variety of interests respectively.

The fourth theme from the teacher interviews was that exploratory learning classroom environments are inviting, warm, nurturing, more home-like or homey, and comfortable for both children and adults. To put it simply, exploratory learning environments are places where teachers and children enjoy being and are places that they “want to go every day.” Teachers provided examples of incorporating soft rugs, plush toys, child sized couches, and reading lamps into the classroom. This theme, although

not directly represented in the key constructs of exploratory learning discussed in the literature review of this study, remind readers that creating an inviting classroom space contributes to the overall quality of an early childhood environment.

Similarly, the fifth theme, correlating with the first key construct of exploratory learning, that the child is at the center of the curriculum: learning is child-directed, revealed that the classroom is “their” (the children’s) classroom, and is not to be directed or taken over by the teacher. Furthermore, children explore and learn at their own pace and have choice within the classroom moving between activities freely as well as have the opportunity to “move the materials around as they explore.” One teacher specifically discussed how she rotated materials in the classroom when children displayed a stronger interest in a particular thing as well as when children appeared tired of exploring existing classroom materials.

The sixth theme from the teacher interviews was that exploratory learning is not thematic, such as exploring a unit on transportation in which every activity in the class relates to transportation, but rather follows the interests of the children. One teacher stated that “we do not follow themes because they are not relevant to the children often. It's more focusing on real life, real events, things that are relevant to the children's life instead of ‘cutesy’ topics.” Theme six also directly correlates to the fifth key construct of exploratory learning: the environment is rich in content for children to explore a variety of interests.

Theme seven, correlating with key construct six, activities in the environment lead to socialization between children and teachers, concluded that young children learn through engaging their senses as well as by socially interacting with peers and teachers.

One teacher commented that “children can’t learn unless they can manipulate. They need to put their whole body into it.” Interestingly, another teacher commented on how she has named children’s exploration as “experiences they will remember, while an activity is something they do for a day and move on.” Moreover, theme seven concluded that teachers encourage social interaction by providing children opportunities to work together, sharing and exploring together, directing attention to one another rather than to the teacher. Many teachers stated that they primarily try to listen to the children and only on occasion interject in conversation. One teacher stated that “it’s surprising how much you can learn from children when you ask them one little question. Often you can do one leading question and they’ll talk and you can build more interest off of that.” The majority of teachers also noted that the children in their classrooms socially interact for nearly the whole duration of the school day.

The eighth theme from the teacher interviews reiterated the importance of including documentation within the classroom such as photographs and dictations of student exploration. One teacher in particular discussed how she would often refer to the documentation on the classroom walls to ask children questions about what they recalled from a previous learning experience, comparing what the student recalled to their current exploration. Theme eight directly correlated to key construct seven of exploratory learning: children are given the opportunity to reflect on their learning.

Themes nine and ten also did not directly represent the key constructs of exploratory learning discussed in the literature review of this study. Rather theme nine discussed the hands-on, active involvement of center directors in aiding their teachers in effectively implementing exploratory learning practices. All of the teachers praised their

center directors for being supportive as well as the importance of feeling trusted. Theme ten divulged that while early childhood assessment tools like ITERS-R, ECERS-R, and CLASS were not found to be threatening, some of the teachers noted that the aforementioned assessment tools come across as inauthentic, not capturing the entirety of the classroom in one observation period. A few teachers also stressed that having several observations throughout the school year would provide a better overall judgment of a classroom's environmental quality. Some teachers also noted confusion between the different requirements of standards such as Reggio Emilia inspired practices, the State of Texas standards, and standards from United Way Bright Beginnings. One teacher mentioned that "we have confusion between licensing, UWBB, [and] TRS. There are times where they conflict."

Although it was not a part of the top ten themes, several teachers also discussed their love of exploratory learning. One teacher discussed how she came from working in a structured classroom setting for roughly thirteen years and that exploratory learning "is just a wonderful way to be with children." Another teacher commented that she is "very inspired and happy with the [exploratory learning] way [of teaching] because it's amazing how kids can learn anything by exploring." Overall, throughout the interviews, the examples that teachers discussed centered on child interest. Furthermore, teachers expressed the inspiration of allowing children to guide the direction of their learning experiences. One teacher even mentioned children often engage with materials in manners that teachers would not have considered. She stated "[children] do what comes natural to them, through everyday play. Things may not always go the way we think it will go, it may go in a different direction. We were exploring lights but instead I had a

child exploring dumping and filling and stacking.” Altogether, out of the ten themes, seven of the themes emerging in the current study correlated with the key constructs of exploratory learning discussed in the literature review in Chapter II.

The consultants also discussed best practices regarding exploratory learning in the focus group, stating some additional perspectives that did not arise during the teacher interviews. Three of the five main themes of the focus group pertained to exploratory learning. The first theme of the focus group revealed that exploratory learning is a shared approach between teachers, children, parents and families, and the community. Moreover, the consultants emphasized that in exploratory learning, all stakeholders are engaged and have equal power. By approaching early childhood education in this manner, a greater sense of trust and partnership develops as every stakeholder is valued. The second main theme from the focus group emphasized that the goal of exploratory learning is not merely to prepare young children for future educational endeavors, but to educate the whole child to be successful in education and in life. Additionally, theme three from the focus group emphasized the important of documentation of child exploration and that documentation makes learning visible. One consultant stated that “parents’ number one question is ‘What did you do today?’ when they pick up their child. We’re also encouraging our teachers to provide a space for parents to write their thoughts on the documentation itself, to have dialogue between those two entities. Children are able to revisit the learning and tell back the occurrence, so it [builds] a great bridge between all three of the protagonists.” Thus, having visible documentation for parents and families to see what is occurring in the classroom is also illuminating.

In summary, the best examples of exploratory learning practices that arose in the teacher interviews and consultant focus group echoed not only developmentally appropriate practices as supported by NAEYC, but also the key constructs of exploratory learning as discussed in the literature review.

Research question two. The second research question of this study explored appropriate descriptors of an instrument. The focus group with the consultants revealed that the consultants liked having an annotated anchor of what was to be observed in the classroom, and overall, felt that the pilot instrument was well constructed. However, the consultants provided specific feedback on certain items of the instrument that they felt needed revision. For instance, for item nine, the consultants suggested rethinking the manner in which the item was described. While the consultants felt that the item anchors were rather clear, they felt that the wording of the item itself was slightly confusing. More specifically, they felt that item nine which initially read “teachers do not provide children with direct instruction” could be confusing for teachers in exploratory classrooms do share their knowledge with children; however, there is a balance in leadership between teachers and children. Therefore the research reworded item nine to read “teachers allow children to openly explore and do not provide children with directive instruction.”

For item twenty-two, the consultants suggesting incorporating additional information into the item anchors or adding an additional item. Specifically, the consultants suggested incorporating wording that stated teachers use documentation to help children connect their current exploration to previous learning experiences. Based on the consultants’ recommendations, the researcher decided to add a new item which

became item twenty-three: teachers use documentation to connect exploring to previous learning experiences.

The consultants also stated that recently, they have been recommending to teachers to incorporate a section for parents to be able to write their comments and thoughts on documentation of children's learning. Therefore, the consultants suggested incorporating wording regarding parent comments into the anchors of item twenty-three (item twenty-four on the pilot scale) or creating a new instrument item. The researcher re-worded the anchors of item twenty-three, which became item twenty-four on the pilot instrument.

The assessors who aided in the execution of the pilot instrument also provided their thoughts on the annotated anchors following the implementation of the pilot instrument in assessor interviews. The researcher chose to interview the assessors following piloting the instrument, for certain insights were only elicited through the application of the instrument in real life settings. The first theme of the assessor interviews indicated that the assessors had a general consensus that the pilot instrument was fairly easy to use and was well constructed; however, some edits were recommended to increase the functionality of the instrument. Theme two from the assessor interviews indicated that the assessors liked having descriptors in the middle ranges to help make distinctions between ratings. However, one assessor stated that while the anchors one, two, three, and five were distinguishable, it was confusing at times to determine if a classroom should receive a rating of 4 or 5.

Overall, the pilot instruments' descriptors were well constructed and appropriate for evaluating the quality of prekindergarten exploratory learning environments.

Research question three. The third research question of this study explored the psychometric properties of a pilot instrument intended to assess the quality of prekindergarten exploratory learning environments. The researcher sought to demonstrate the instrument's reliability through a Cronbach's alpha analysis by aiming for a Cronbach's alpha of 0.70 or higher to demonstrate good internal consistency. The pilot instrument had a Cronbach's alpha of 0.934 demonstrating excellent internal consistency (DeVellis, 2012). In addition, the researcher aimed to demonstrate the instrument's validity by obtaining a 0.50 moderate correlation through a bivariate correlation coefficient analysis associating instrument scores with ECERS-R scores, since some constructs from both exploratory learning and structured learning overlap. The resulting Pearson correlation coefficient (r) was 0.486, indicating that there was a moderate positive relationship between the participants' pilot instrument scores and their total ECERS-R scores. Moreover, the resulting Pearson correlation coefficient (r) demonstrated that there was enough difference between the widely used ECERS-R and the pilot instrument; thus, the pilot instrument contributes to the field of early childhood education by closing an existing gap in the assessment of early childhood environmental quality.

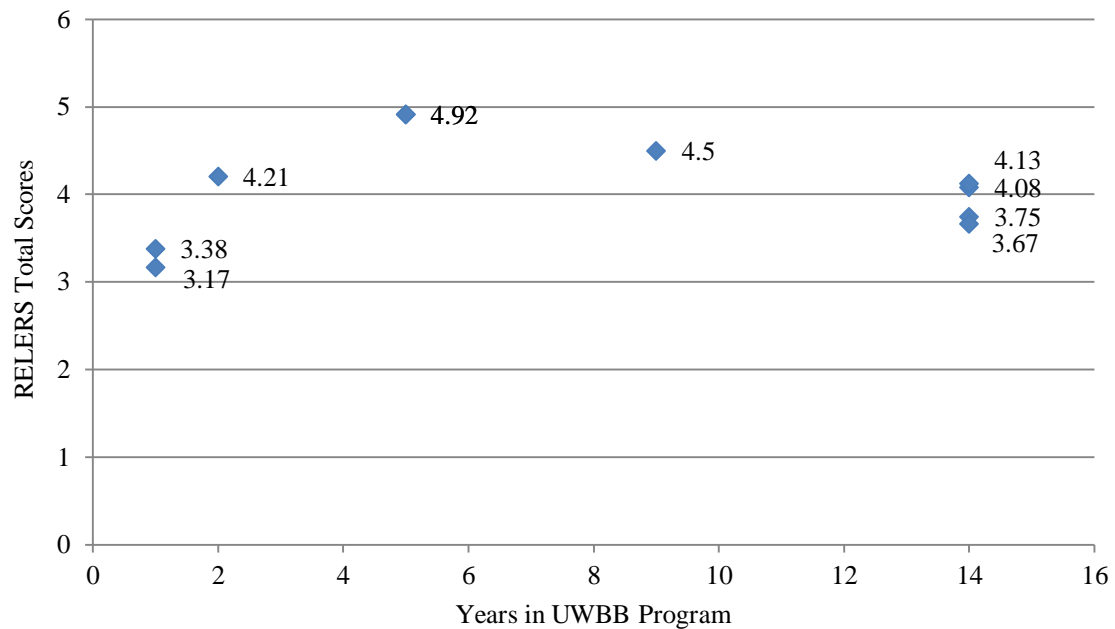
Evidence from this sample suggests that the researcher made large strides toward the development of an instrument that measures the quality of prekindergarten exploratory learning environments.

Research question four. The fourth and final research question of this study explored the results of the pilot instrument, the Rutter Exploratory Learning Environmental Rating Scale (RELERS). The RELERS instrument results determined

that the ten participating classrooms' scores ranged between 3.17 and 4.92 with an average of 4.07. Therefore, the classrooms scored between good to excellent quality on the RELERS instrument.

The classrooms that were a part of the newest additions to the UWBB program, tier VII, scored the lowest on the RELERS with scores of 3.38 and 3.17. These lower scores could be attributed to the fact that since center 5 is new to the United Way Bright Beginnings program, the director and staff members at this center are in the process of receiving professional development and mentorship to transition their practices to implement more exploratory learning practices.

Surprisingly, the classrooms that have been a part of UWBB program the longest, from center two, did not score the highest on RELERS. Center two's total scores on the pilot instrument were 3.75, 3.67, 4.08, and 4.13. While it could be assumed that the centers' longevity with the program should lead to higher quality practices and therefore higher environmental rating scores, other factors may have influenced the scores for this center. Additional influencing factors that were not explored in this study include teacher tenure, teacher education including professional development hours, teacher mentorship and support, center resources and materials, and parental involvement. Figure 6 below summarized the RELERS scores compared to years in the UWBB program.

Figure 6 Years in UWBB Program and RELERS Total Scores

The results of the pilot instrument indicated that some of the participating classrooms were on the lower end of good quality (scores ranging between 3.00 to 4.00) while other classes were rated as excellent quality (scores ranging between 4.00 to 5.00). The results of the pilot instrument also demonstrated that centers that were in the UWBB program for a longer duration, generally scored higher, with the exception of classes from center two.

Additional Interview Themes

Focus group. In addition to the three themes discussed previously in this chapter, two other main themes arose from the analytic induction of the focus group. The fourth theme reflected how the consultants mentor teachers that are a part of the United Way Bright Beginnings program. The consultants stated that they approach their task of mentorship as a partnership rather than telling teachers what to do and how to do things.

Instead the consultants expressed that their job included listening to and responding to the needs of teachers. Moreover, the consultants expressed that by approaching changes to teaching practices and the classroom environment as partnership through collaboration, a community of trust has been built between them.

The fifth theme from the focus group concluded that high quality early childhood educational environments meets not only the health and safety needs of young children, which are basic foundations of quality; they also meet the individual needs of the children by including their interests and providing them with opportunities to explore and make choices. One consultant in particular discussed how in contrast to other educational environments, exploratory learning environments tend to be more organic in how curriculum emerges from child interests and choices.

Overall, data obtained from the focus group extended the data from the teacher interviews as well as aided in the revision of the draft instrument prior to piloting.

Assessor interviews. Similar to the focus group, in addition to the two themes discussed previously in this chapter, three other main themes arose from the analytic induction of the assessor interviews. The fourth main theme from the assessor interviews indicated that there was some confusion regarding whether assessors were to consider the quantity or quality of certain items on the instrument. For instance, one assessor provided the example of one classroom having three centers for children to explore in versus another classroom having seven centers. The assessor clarified by explaining that perhaps, even if a classroom only had three centers, those three centers may be considered high quality, especially when compared to a classroom that has seven centers that are of low quality. Based on this confusion, it was suggested that the researcher

consider clarifying the directions of the instrument and the quantification of certain instrument items.

Theme four from the assessor interviews revealed that evaluating the construct of documentation was slightly difficult, for the pilot instrument was only implemented in one session; however, documentation within classrooms builds throughout the entire school year. Moreover, one assessor noted that teachers are not engaged in documenting children's learning every minute of the day. In addition, the same assessor also noted that parent contributions to documentation may be an aspect of the instrument to rethink, for there are several factors that influence parent participation such as liking to write, time given to contribute to documentation, and language barriers.

Last, the fifth theme from the assessor interviews was that the researcher should clarify in assessor training that the assessors are only to score what they see, and not what they are told by center directors or teachers. One assessor in particular discussed being influenced initially by what they were told by the teacher when implementing the pilot instrument; however, the assessor reminded themselves to only rate what they observed.

To summarize, the assessor interviews provided data regarding the strengths and weaknesses of the pilot instrument as well as recommendations for future research.

Limitations

Despite the strengths of the mixed method design used to conduct this study, the study faces some limitations. First, due to the sample size piloting the RELERS instrument, only ten prekindergarten classrooms, the results of this study may not generalizable to the larger early childhood education community. Moreover, the sample size for this study consisted of prekindergarten classrooms from one early childhood

program (United Way Bright Beginnings). Implementing the RELERS in additional exploratory learning environments that were not a part of the United Way Bright Beginnings program could have provided varying results and additional insight into the functionality of the instrument. In addition, because the instrument was designed to assess the quality of exploratory learning environments, the instrument is not generalizable to other types of early childhood education environments, including structured learning environments.

Another limitation to this study was that the interviews pertaining to determining the best examples of exploratory learning practices were only conducted with early childhood educators supported by the philosophies and practices of one program (United Way Bright Beginnings), and did not include early childhood directors or early childhood educators from other exploratory learning programs such as Montessori programs and HighScope programs. Thus, the interviews only gathered the thoughts and perceptions of certain educators while excluding directors and educators outside of the UWBB program. Directors of exploratory learning environments and early childhood educators in other exploratory learning programs may have provided additional examples of best practices for exploratory learning environments. However, many commonalities that exist among such sites were dependably observable within this carefully chosen sample.

Recommendations for Future Research

The construction of a pilot instrument to assess the quality of exploratory learning practices for this study still leaves room for the RELERS to be further defined. It is suggested that future research should be conducted with the RELERS using a larger sample size of teachers to interview from a variety of exploratory learning programs to

cross reference data to better refine the items and annotated anchors of the instrument in this study. Moreover, future research should pursue a larger sample size when implementing the RELERS to aid in the generalizability of the results of the research to the greater early childhood education community.

The lack of variability in instrument scores also suggest that a future study might look at how the RELERS can be refined to include a 7 point annotated anchor scale rather than a 5 point annotated anchor scale to provide assessors with clearer distinctions between ratings. Additionally it is recommended for future studies to be conducted on marrying aspects of the RELERS and widely used environmental rating scales such as the ECERS-R or CLASS to create a more comprehensive environmental rating scale that is applicable to more than one type of early childhood educational environment. The aforementioned recommendation was suggested for while structured learning and exploratory learning environments and practices are rather different, early childhood environments across the nation are varying. In addition, early childhood education environments do not always operate explicitly as structured or exploratory learning; rather early childhood environments may be a combination of the two approaches or a combination of other early childhood approaches.

Conclusions

The purpose of this study was to design an observational measure to assess the environmental quality of prekindergarten exploratory learning environments. A pilot instrument titled the Rutter Exploratory Learning Environmental Rating Scale (RELERS) consisting of seven constructs and twenty-four total items was developed by the researcher and piloted in ten prekindergarten exploratory learning environments.

Following the implementation of the pilot, statistical analysis was conducted to investigate the reliability and validity of the instrument. The overall psychometric properties of the RELERS indicated that the instrument achieved the researcher's aims of high internal consistency and a moderate correlation with a widely used environmental rating scale, the ECERS-R, showing that it measures some common areas and some distinct areas. Additionally, interviews of teachers and assessors, and a focus group with consultants supported the literature on the constructs of exploratory learning and revealed real life examples of best practices regarding exploratory learning.

In summary, the findings from this study suggest that future researchers could utilize the instrument from this study to explore the environmental quality of additional exploratory learning environments to pursue meaningful refinements, as well as a more comprehensive scale to assess early childhood environments that are not strictly classified as structured or exploratory.

Implications for Policy and Practice

The learning environment plays a crucial role in fostering the optimum development and growth of young children. Improving the quality of early childhood education environments is currently a national goal. Therefore, it is imperative for the early childhood community to not only have assessment tools that measure the quality of structured learning environments, but also exploratory learning environments, for not all early childhood educational environments are the same or based on the same guiding principles.

By using an instrument designed to measure the quality of exploratory learning environments in real settings, directors, teachers, and policymakers can understand how

to best improve the quality of these environments by having clearer descriptions of the strengths and weaknesses of individual exploratory learning classrooms. These descriptions will also guide experts in how to support teachers in exploratory learning environments and improve their practices.

In addition, the findings of this study support the United Way Bright Beginnings (UWBB) program and demonstrate that the UWBB program creates high quality exploratory learning environments. Research has demonstrated that the quality of an education environment is an integral component to the overall perception of quality of an early childhood education program. Early childhood educational environment includes not only the space and furnishing, and educational materials and activities, but also the manner in which educators support young children's development (Bredekamp, 2011; Gordon & Browne, 2010). In order to create high quality learning environments, educators need to be well trained and supported. Hence, since 2002, early childhood educators and directors employed in UWBB participating centers have been supported with continuous high quality professional development opportunities in which they learn not only the key constructs of exploratory learning practices, but also how to translate these philosophies into classroom practices that foster the development of the whole child. Moreover, the fundamental goal of early childhood education is to support the optimal development of young children from birth to age eight, and this study's findings contribute to the field of research on measuring the quality of early childhood exploratory learning environments as well as supporting high quality exploratory learning practices.

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SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

Appendix A

Interview Questions for Teachers

The below questions will be asked to gather demographic background.

- 1) What is your ethnicity?
- 2) What is your highest level of education?
- 3) Do you have a CDA?
- 4) How long have you been teaching?
- 5) How long have you been a prekindergarten teacher?
- 6) How long have you been teaching at your current center?
- 7) How many students are in your class?

The following questions will be asked to gather information on Reggio-inspired practices and quality.

- 1) Have you ever received training regarding Reggio-inspired practices?
- 2) How long have you implemented Reggio-inspired practices?
- 3) How would you describe Reggio-inspired practices?
- 4) The role of a teacher in a Reggio-inspired classroom is to act as a facilitator, guiding learning. What is the difference between leading learning and guiding learning? How do you fulfill the role of a facilitator in your classroom?
- 5) How do you ensure that learning is child-directed in your classroom?
- 6) What are the differences between the teaching practices of a Reggio-inspired classroom versus a traditional pre-kindergarten classroom?

- 7) Please describe some examples of Reggio-inspired practices you implemented with your students.
- 8) Please describe the differences between the set-up of a Reggio-inspired classroom versus a traditional pre-kindergarten classroom.
- 9) How does the classroom set-up impact the quality of a Reggio-inspired classroom environment?
- 10) What does a quality Reggio-inspired learning environment look like to you?
- 11) How do you set-up your classroom for exploration?
- 12) Please describe how children learn through exploration.
- 13) Rich environments incorporate a variety of materials and activities. Please describe an example of how you create a rich environment for your students.
- 14) How do the activities you use in your classroom lead to socialization? Please describe some examples of how children socially engage in your classroom.
- 15) How do you give children the opportunity to reflect on their own learning?
Please describe some examples of when children reflected on their own learning and the outcomes of those reflections.
- 16) How do you assess the quality of your classroom?
- 17) How does your director assess the quality of your classroom?
- 18) Are you familiar with the ITERS-R, ECERS-R, and/or CLASS?

- a. Do you think the aforementioned assessments accurately reflect the quality of your classroom? Why or why not?

19) What do you think should be measured to gain a better understanding of the quality of Reggio-inspired environments?

20) Is there anything else you'd like to share that I did not ask?

SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

Appendix B

Focus Group Interview Questions

The below questions will be asked to gather demographic background.

- 1) What is your ethnicity?
- 2) What is your highest level of education?
- 3) How long have you been a consultant?
- 4) How long have you been working with United Way Bright Beginning's?

The following questions will be asked to gather information on Reggio-inspired practices and quality.

- 1) How would you describe Reggio-inspired practices?
- 2) Can you describe the differences between the set-up of a Reggio-inspired practices classroom versus a traditional pre-kindergarten classroom?
- 3) Can you give an example of when you aided a teacher in setting-up their classroom to be more Reggio-inspired? What changes did you make to the classroom?
- 4) How does the classroom set-up impact the quality of a Reggio-inspired classroom environment?
- 5) What does a quality Reggio-inspired learning environment look like to you?
- 6) How do you assess the quality of a teacher's classroom?
- 7) Can you describe the differences between Reggio-inspired teaching practices versus traditional teaching practices for pre-kindergarten?

- 8) Can you give me an example of a Reggio-inspired practice you guided a UWBB teacher to implement in their pre-kindergarten classroom?
- 9) When you assess a pre-kindergarten classroom, what practices do you expect to see that are Reggio-inspired?
- 10) Do you think the ITERS-R, ECERS-R, and/or CLASS assessments accurately reflect the quality of pre-kindergarten classroom that are Reggio-inspired? Why or why not?
- 11) What do you think should be measured to gain a better understanding of the quality of Reggio-inspired environments?

The following questions will be asked to edit and further define the descriptors of ratings for the items of the scale

- 1) Please review the items for the scale. Are the descriptors appropriate for each item and rating? Do any descriptors need to be re-worded?

Appendix C

Interview Questions for Assessors

The below questions will be asked to gather demographic background.

- 1) What is your ethnicity?
- 2) What is your highest level of education?

The below questions will be asked to gather information on the implementation of the instrument.

- 1) On a scale of 1 2 3 4 5 1 being very hard and 5 being very easy, how would you rate the ease of use in pre-kindergarten classrooms?
- 2) Did you experience any difficulties in utilizing the instrument? If yes, can you describe them?
- 3) Was the time-frame for implementation of the scale realistic and feasible?
- 4) Were the instructions for the instrument clear? If no, can you describe what was unclear?
- 5) Were the constructs of the instrument clear? If no, can you describe what was unclear?
- 6) Were the 5 point ratings for the instrument clear? If no, can you describe what was unclear?
- 7) Was calculating the total score of the instrument clear? If no, can you describe what was unclear?
- 8) Would you suggest anything on the instrument be re-worded?
- 9) Would you suggest other changes to the instrument?
- 10) Is there anything else you'd like to share that I did not ask?

Appendix D

Teacher Interview Transcripts

SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

	<i>T1</i>	<i>T2</i>	<i>T3</i>	<i>T4</i>	<i>T5</i>	<i>T6</i>	<i>T7</i>	<i>T8</i>
<i>What is your ethnicity?</i>	Caucasian	Caucasian	Caucasian	Caucasian	Hispanic	Caucasian	African-American	Hispanic
<i>What is your highest level of education?</i>	Bachelors	High school diploma	High school diploma	Bachelors	Bachelors	Associates	Associates	High school diploma
<i>Do you have a CDA?</i>	No	Yes	Yes	No	Working toward	No	No	Yes
<i>How long have you been teaching?</i>	16 years	29 years	10 years	3 years	4 years	15 years	8 years	3 years
<i>How long have you been an early childhood teacher?</i>	16 years	29 years	10 years	3 years	4 years	15 years	8 years	3 years
<i>How long have you been teaching at your current center?</i>	6 years	10 years	10 years	3 years	4 years	1.5 years	8 years	2 years
<i>How many students are in your class?</i>	11	7	6	18	14	14	12	12

<i>Have you ever received training regarding Reggio-inspired practices? Can you describe the training?</i>	Yes. There have been lots of trainings in the past six years that I have been here. Using realistic items rather than fake items, documentation, the teacher as researcher, letting the children lead the learning letting them pick what they want to learn about and go with it.	Yes. We have had training in invitations, how kids learn through play, how to let them be more competent.	Yes. It teaches us how to follow the lead of the child and their interests rather than us pushing our interests on the child. We provide them with materials that they can implement in their own way. We give them real objects (things that are familiar to them) to explore their environment.	Yes through the UWBB. We have quarterly trainings and weekdays throughout the year where the staff is taught on different trainings.	Yes. We learn to be observers.	Yes, trainings we do through UWBB. It's a quarterly trainings that we go through where we learn about practice, room set-up, it's not curriculum but learning how to listen to the children, following children's interests to create the curriculum.	Yes I have. The training was offered at UWBB. How I was introduced to it was through research they have done in Italy through videos and pictures, and they offer us ideas on how we can come back and implement it in our classrooms.	Yes. I have been learning that kids can do anything, anything is possible if we are persistent, and we have to provoke learning by providing a learning environment where they can work with different materials. You don't have to force things, kids can make choices.
<i>How long have you implemented Reggio-inspired practices?</i>	6 years	7 years	9 years	2 years	3 years	1.5 years	3 years	2 years

<i>How would you describe Reggio-inspired practices?</i>	<p>The use of documentation to make learning visible. The use of real items for open-ended exploration. Setting up invitations for students to go to. Depending on what the activity is, there are different items that the children can use open-ended to explore how they want to.</p>	<p>We let the children to a bit more, help them to not be scared to try new things. We let them go to the next level, we don't let me get to a certain spot and say 'no that's dangerous and stop", we let them try and figure it out for themselves.</p>	<p>Following the lead of the child and their interests.</p>	<p>It's an all encompassing approach that looks at the whole child. It's a lot of long term projects, play.</p>	<p>Following the lead of the child and their interests.</p>	<p>Reggio is following the lead of the child, basing curriculum off of child interests.</p>	<p>The way I will describe it is giving students or allowing students to explore the world around them, a lot of hands-on experiences.</p>	<p>I think it is amazing, seeing kids learn. I thought before that they're too little, But when you put out an invitation, you never know what they will tell you! The other day we had ice in balloons, and we presented it to the children. We put insects in the balloons and they ended up doing things I never thought they would do.</p>
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<p><i>The role of a teacher in a Reggio-inspired classroom is to act as a facilitator, guiding learning. What is the difference between leading learning and guiding learning? How do you fulfill the role of a facilitator in your classroom?</i></p>	<p>Leading learning is more of the teacher guiding what the students are doing. Guided learning is letting the kids do it hands-on and the teacher to be there to give students more information about what they are exploring such as words to use/vocabulary, not me telling them what they should be doing or how to use it.</p> <p>Having the classroom set-up so that I do not have to be standing over children all the time, explain new materials to children before they use them. It gives me the</p>	<p>Guiding learning we set the invitation out. We talk to them and let them know it is ok to try something new.</p>	<p>Leading, is you're not really going with the child. With Reggio, you offer them an invitation and follow their lead and their interests. We learn from them on a daily basis. They do what comes natural to them, through everyday play. Things may not always go the way we think it will go, it may go in a different direction. We were exploring lights but instead I had a child exploring dumping and filling and stacking.</p> <p>Offer appropriate materials for</p>	<p>At the beginning of the year it's hard to think of how do we guide learning since we don't know the students that well yet.</p> <p>Leading is more you have an idea in your head about the process and product, where as guiding is more letting children pursue their own ideas and their own work. I try to listen way more than I talk and take notes of what the children are interested in.</p>	<p>I follow the lead of the kids, and I guide them.</p> <p>When I guide them I am observant and I listen to what they like.</p>	<p>Listening to the children, following their interests.</p> <p>Having an awareness of the children. It starts off with listening, following their lead and I think about how I can implement their interest into the classroom.</p> <p>When they start working in a center, I watch them, observe them, and rethink how to extend it. It's surprising how much you can learn from children when you ask them one little question. Often you can do one leading question and they'll talk and you can build more interest off of that.</p>	<p>Guiding is where you're by their side and encouraging their learning through setting up experiences and activities that may guide them to learning you're presenting to them. Leading is more as the teacher is demonstrating and the child is following you.</p> <p>For me it's creating a rich learning environment and observing their learning, documenting what is observed.</p> <p>Providing meaningful learning opportunities, and not getting in the way of their learning, providing positive feedback.</p>	<p>Leading for me is like telling a child "you have to do it" while guide is we direct and encourage children. It's very clear for me that it is different. I give my students choices and suggestions. I let them tell me what they want.</p>
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	opportunity to observe more.		their age of development, safe but sometimes risky (ex: pinecone) and invitations that peak their interest.					
<i>How do you ensure that learning is child-directed in your classroom?</i>	Letting the students choose what they want to learn about, letting them follow their interest.	Everything in the room is child directed. We have things at their level. I don't see it as my classroom, it's their classroom. It's not my stuff, it's their stuff so they are welcome to touch the materials and take things off the shelves (at their leisure)	We let them choose what they want to do. We put material out and see where the child goes with it.	By constantly thinking of what brings joy to the children, what they're interested in. Sometimes I bring things out and they aren't interested, so I change it up.	I took it as my philosophy and I observe them and try to see if they are interested.	Yeah basically that, just listening to them, following their lead. Hands-on. Children can't learn unless they can manipulate, they need to put their whole body into it.	It's based on off the student interest and not off of ours. If we notice that something is interesting to the child, we provide it and then extend the lesson off of that. So that is how we keep it student centered.	I am consistent. I present things to them and give them choice.
<i>What are the differences between the teaching practices of a</i>	Traditional is more sitting down, making children do work like ditto	Reggio is not teacher-focused, like the things on the walls,	I've never been in "traditional." To me traditional is	Just knowing that each year can be totally different about the direction	I never taught in traditional, but I was a student and	We do not follow themes because they are not relevant to the children	A traditional is more teacher-direct instruction, explicit	I think a traditional one is more like, okay we have

<i>Reggio-inspired classroom versus a traditional pre-kindergarten classroom?</i>	<p>sheets. I would get frustrated because the kids didn't want to do it, and the kids would get frustrated because it's not what they wanted to do. In Reggio, there are no ditto sheets, or they are not made to stay at a center doing things they don't want to do. We don't force anything on the children that they don't want to do.</p>	<p>with Reggio material is not restricted. For example if we have rocks in the classroom they can count them, discuss texture, size, instead of just having cards that say this is a rock or numbers. By having cards they can't interact. They learn more from real objects. Reggio is more hands-on.</p>	<p>more caring for the maintenance of the child, but in Reggio, it's not just about maintenance but we're also building the skills of the child to be a whole person.</p>	<p>the class will go in.</p>	<p>my daughter studied in a traditional system. From my perspective I don't understand how you can receive information when you are not interested. In Reggio children pursue what they want to do. This could explain the problems we have with teenagers. They didn't foster a love of learning and you force them to do something they don't want to do.</p>	<p>often. It's more focusing on real life, real events, things that are relevant to the children's life instead of "cutesy" topics. It's their classroom. It's their world here. They learn responsibility, independence, and the importance of being a citizen.</p>	<p>instruction and teacher-centered while Reggio is more child-centered and based off the student interests. Student are leaning based off interests but we're promoting their development.</p>	<p>some numbers 1,2,3,4 and you have to learn these numbers. But with Reggio you have an open door to learn about whatever you want so there is more learning than the traditional form.</p>
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<p><i>Please describe some examples of Reggio-inspired practices you implemented with your students.</i></p>	<p>Long-term studies, documentation, things looking homey</p>	<p>We just gone done with lights, so we went and found different color light bulbs a black light, we experimented with how the lights looked.</p>	<p>We've done some nature things. We have a sensory tub where we've put in gumballs, pinecones, dirt, and see what they want to do. We offer different textures, engaging different senses. We offer not just the items but the language to go with it, "how does it feel, taste, smell." I've done many stories on an old stump on the playground. Children would explore the different ages of decomposition of the stump.</p>	<p>We started a mystery bag. The children picked out the fabric, we planned the design together, and sewed it together so it is meaningful with them.</p>	<p>They like to play with ramps. They started with rocks, then we switched the rocks for cars and they became more involved. Through this we discovered that they can work as teams.</p>	<p>Right now we are studying the trees in the playground. One day the children were talking about how the trees don't have leaves right now, so we started a topic on it. We drew pictures, talked about it, and we're going to document the changes in the trees. We also did a study of emotions. Children do not always read someone's face, but it's an important skill to learn so we discussed emotions, acted out emotions, and learned to read someone's face, what stop looks like.</p>	<p>The classroom itself is more natural, the books we use aren't cartoon characters but its real books (non-fiction) to promote their development. Every material in the classroom has a purpose. We bring the natural from outside indoors. We believe that every moment is a teachable moment.</p>	<p>The other day we started cooking, we made some spaghetti in the microwave. We talked about food, where spaghetti comes from, other cultures from other cultures, what do parents cook at the house, how to boil spaghetti, it was really nice. It gave me the opportunity to talk about culture and it was a community experience.</p>
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<p><i>Please describe the differences between the set-up of a Reggio-inspired classroom versus a traditional pre-kindergarten classroom.</i></p>	<p>Most preschools have centers, but Reggio is realistic (real objects) and teacher-made, loose parts that children can engage with rather than traditional toys. The pictures that are in the classroom are of the children rather than stock photos.</p>	<p>It's more homey and comfortable, not as bright compared to a regular child care facility, it's more relaxing and laid back.</p>	<p>I've never been in "traditional." To me traditional is more caring for the maintenance of the child, but in Reggio, it's not just about maintenance but we're also building the skills of the child to be a whole person. We bring in real items that they can relate to more.</p>	<p>Aesthetically it is more natural materials, more realistic items, no bright colors unless its kids art, a lot of documentation, photographs and written words of what the children have been working on.</p>	<p>Things need to be on their level, you can get the attention of the child when things are on their level.</p>	<p>Reggio is totally focused on the natural elements of our world and our surroundings and tries to incorporate things in our immediate surroundings. We try to eliminate plastic toys, we work with loose parts which is anything you can find, we build, anything that is natural, wood, things from outside, recyclable objects.</p>	<p>With traditional classroom it might not address the child's development, Reggio we actually have a scale called ECERS that tells us the things we should have in the classroom and why. In a traditional classroom you might have math centers, science centers, and a library, but in Reggio, a book can be in every center because you promote different learning throughout the classroom rather than restricted to one center.</p>	<p>A traditional is more routine, in Reggio there is the opportunity what you want to do and where you want to work in the classroom. More opportunity for choice.</p>
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<i>How does the classroom set-up impact the quality of a Reggio-inspired classroom environment?</i>	The classroom has to be set-up so that children can engage on their own.	It helps the learning, they concentrate a little more on the things we have in the classroom, and they take care of it, they aren't destructive with the materials.	You get deeper learning, a deeper learning experience because so many more items are offered versus a traditional childcare classroom.	We're outside a majority of the day, so the outside environment is just as important as the classroom. It is more calming and home-like. It's comfortable.	Setting up for exploration leads to more engagement.	Child-directed. Everything single thing in the classroom should be accessible to the children because it's their classroom. Also open-ended. There shouldn't be anything that only has one purpose or "rules" of how to play with it. And time, children should have enough time to finish what they are doing. Children can't finish what they started if you only give them 10 minutes.	A lot of the materials are durable and recyclable, they are rich, they have a purpose.	When we set you the learning environment, we are always thinking of how to invite kids to learn. We put real things that are real life, we always make sure that they have the opportunity to learn.
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<i>What does a quality Reggio-inspired learning environment look like to you?</i>	Making sure that there are high standards (State, UWBB, NAEYC)	When you can walk into the room and children are not limited on what they can experiment with. Children should be able to walk into the room and touch, smell, anything.	Things are placed on the child's level, there are more real items, more of a home-like environment, things aren't hidden from children, they are brought out for exploration. The items evolve as you follow the lead of the child. For example we explored clay, then explored tools, then put the two together.	A place where I want to go every day. If the staff wants to be there it means a lot. Things are easy access for children and at their eye level.	Things are on the child's level.	Like Blossom Heights! Child-directed, child accessible, a beautiful place. It's important for children to be surrounded by natural beauty.	I think that a quality Reggio classroom or learning environment looks like where students are engaged in their learning, they are given the opportunity to explore and discover new things.	Children are able to do a lot of things. (opportunity)
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<i>How do you set-up your classroom for exploration?</i>	I try to have something out on each table/center (invitation) or have provocations	We put things throughout the room. I'll put new things out on the table for them to explore. They can move the materials around the classroom as they explore.	My co-teacher and I decide things we want to explore, we gather items, and present the items to the children for the children to explore. It's an invitation, we invite them to explore.	We try to switch things up often. Having things at the child's level. Having beautiful presentations of the way we put things out (inviting).	We divide things into centers, which leads to more exploration.	Everything is at the child's level. Everything that is out is allowed to be looked at and explored. The child's work is displayed as well at the child's level. Open-ended exploration, hands-on, and free choice.	We plan ahead of time. We set up different materials at different tables for exploration based on student interest. We may model first, but a lot of the times we let children go straight into it and explore. We take pictures, and we communicate with the parents and they can see how their child is learning.	If I have a topic in mind, let's say we want to explore nature, we try to bring the material into the classroom.
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<i>Please describe how children learn through exploration.</i>	Depending on the reason we have certain material, we ask them questions	We had a paper towel holder with different spools of ribbon. I just thought they'd use it in their art. But they took all the ribbon off and then a child sat and counted the empty spools onto the paper towel holder.	They explore through their senses.	It's play-based, so as they are playing with things, they're coming up with hypothesis and ideas, predications. Staff that are around write down/note their ideas.	Right now we are playing with hammer and tools, and instead of plastic toys, I want them to feel the real tool so we have real ones. When they are exposed to real things, they engage better.	They interact and use their senses to learn about objects they are exploring. Touching, smelling.	Play is their first learning. Children learn through play and exploration. Say if a child has a cup and is measuring, she is doing more than measuring, she is learning fine and gross motor skills, in and out, pouring, and a teacher can extend it and can count the cups and she pours saying "that's one cup, two cups, etc." So much learning occurs just by pouring a cup of sand.	They learn by touching, smelling, we try to model, we ask questions. They remember about exploring things.
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<p><i>Rich environments incorporate a variety of materials and activities. Please describe an example of how you create a rich environment for your students.</i></p>	<p>By trying to find the balance of not having too much stuff out, but enough material that they are not bored. Knowing when is the right time to change materials out. When I start seeing kids misbehave I know it's time to start learning something new.</p>	<p>I'm always adding stuff. I find things from other countries for dress-up, actual clothing like I have a little Indian dress, I try to add materials that are more realistic. Not just "princess" theme.</p>	<p>We switch out things often. I know if I'm bored with it, they're bored with it.</p>	<p>By providing materials that they show interest in, authentic material/real that people actually use and not plastic toy stuff. Ex: real hammers and nails.</p>	<p>Use materials that the child is interested in.</p>	<p>Constantly change out and rotate materials. Keep in fresh. Listen to the children's ideas. We're constructing a gazebo right now and we have castles in our dramatic play. So to incorporate the two together we were looking at pictures of real castles and discussing the roofs, windows, and different type sofa buildings and architectural designs.</p>	<p>ECERS helps us see the materials that should be in the classroom.</p>	<p>We have wooden materials, real plants, books about the world around them, we have a real kitchen, things that they can see that is more like home.</p>
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<p><i>How do the activities you use in your classroom lead to socialization? Please describe some examples of how children socially engage in your classroom.</i></p>	<p>The kids talk to each other and the teacher adds on by asking open-ended questions, making them think, giving time for response.</p>	<p>We ask questions one student starts to respond and the others join in.</p>	<p>The children come together and they watch each other. They're very observant.</p>	<p>Most of the things we have are group activities so there is always talking going on, kids often want to share things they made, so there is ample opportunity for discussion. They socialize every minute. Right now we're building a gazebo so we're discussing the building process.</p>	<p>Everything is about socialization. They learn together. They are free, they are not forced to sit down and do something. They learn with their hands and they communicate with each other.</p>	<p>Every single thing in our classroom. Everything we do we are talking to the children, they're talking to each other, we encourage problem solving and communication, that's our main goal.</p>	<p>A lot of the activities, well we like to call them experiences, because experiences they will remember while an activity is something they do for a day and move on. That's why we do an extension. The experiences are hands-on and in group settings so we promote the social and emotional development. At this age everything is "mine" so we encourage group experiences to help them understand the importance of sharing and caring.</p>	<p>We try to put multiple materials to avoid conflict and enough material so that they can share, suggest them to invite friends to play to focus on empathy and social skills.</p>
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<p><i>How do you give children the opportunity to reflect on their own learning? Please describe some examples of when children reflected on their own learning and the outcomes of those reflections.</i></p>	<p>By talking to them, asking them questions, and leaving out invitations for them to enhance their learning of a topic.</p>	<p>We let children try things and ask questions. We give them opportunities.</p>	<p>We revisit. We evolve topics, like the clay we visited that, then the tools, and then put them together to see what they remembered and learned.</p>	<p>We have photos up of things they've been working on, we take news everyday and stories everyday that we post.</p>	<p>I talk to them, and ask the questions. We have photos around the room of when they were exploring.</p>	<p>By talking about it, validating it, after open centers time, we gather as a group and discuss anything that they did, the group time isn't about my voice but their voice, even discussing what they want to do tomorrow</p>	<p>We like to document and take pictures, pictures of their learning is on the wall and the documentation of what happened spa that is one way we help them reflect because we read it to them and they can reflect on that's me, what was I doing in that picture. Documentation gives up the opportunity to where we can reflect, and where they can reflect also.</p>	<p>At the end of the day I will read a book with them and I will try to choose a topic that aligns with what we discussed during the day. They get excited.</p>
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<i>How do you assess the quality of your classroom?</i>	When the assessors come and do the ECERS and CLASS	When I see the children getting bored with something, then we change onto something else. Child interest.	If the items spark and interest with the children.	One assessment tool we use is GOLD, it's not my favorite because it's time consuming, but it does hold me accountable for some aspects of learning I wouldn't think about.	I see if the children are interested.	Parents. Mostly assessment - GOLD 3-4 times a year and it tells you where the children are and you can see the growth in the children or if a child hasn't improved you can figure out okay why, what can I do to move forward. The parents are so involved in this school though and they give a lot of feedback.	Documentation, seeing the experiences I provided for the students, looking at their growth, putting it into GOLD, seeing child development.	I always make sure that I have the materials and tools that I need, that I have the right equipment always in advance time.
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<i>How does your director assess the quality of your classroom?</i>	She uses the scores on ECERS and CLASS	I don't know.	She observes.	She is in and out of the classrooms all time, so her being around, and we're always in communication, anecdotal evidence.	She is always there, observing, making suggestions, giving input. She always invites us to experiment, just like the kids.	She is really hands on, she is always present, but also by GOLD, and also because we are a part of UWBB so we are accountable and report to them.	She comes in, she engages in the learning experience, the students welcome her in and the students love her. We have a director that does not care to sit at her desk, she loves to be involved in the learning. She's pretty much involved all the time.	She always asks about lesson plans, do you need assistance, resources.
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<p><i>Are you familiar with the ITERS-R, ECERS-R, and/or CLASS? Do you think the aforementioned assessments accurately reflect the quality of your classroom? Why or why not?</i></p>	<p>It depends on who they send in to do the evaluation. Some people do not have a Reggio background so they'll dock us on things ex: glass.</p>	<p>Yes, I think so. The CLASS really (open-ended questions).</p>	<p>Yes. We have to have a certain amounts of items per child, that way there is no tugging of materials, we have natural lighting, we have the documentation on our walls, pictures of children in different cultures,</p>	<p>I remember when we were going to be assessed we had to have a certain number of ethnic baby dolls so we had to hurry and put them out, that didn't feel authentic. Some things like the amount of music instruments per child isn't realistic to have out all the time. I'm sure they miss something but I can't think of anything right now.</p>	<p>I am familiar with these, but I have never seen them.</p>	<p>Yes. Yeah, I think that ITERS and ECERS confuse me a little because there is so much stuff at one time that you should have in your room.</p>	<p>Yes I'm familiar. I believe so to some degree. As far as the materials and the things we need t work on, they're accurate. Of course there are times they say we didn't see this in the classroom, we know we do it but we need to do it more often. It helps us better ourselves as far as providing a quality learning environment for our students. Yeah, there's times where they have come in and I've felt like we've done something and they didn't notice it. So there are times where I wondering,</p>	<p>Yes. Yes. No I think they are pretty complete.</p>
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							<p>what are you expecting from me, are you wanting a perfect score, and if we have a perfect score what does that mean? Every day we try our best to provide a rich learning environment. We're not in a traditional center so I know they expect higher from us.</p>	
<p><i>What do you think should be measured to gain a better understanding of the quality of Reggio-inspired environments?</i></p>	<p>Having some kind of tool that understand that we're trying to meet the needs of different organizations, while using a method from another country that doesn't have all the rules that we do.</p>	<p>I don't know.</p>	<p>They can't see everything within the time that they're in the classroom. I'm sure it misses something, I know it's detailed, but what they don't see they can look at our portfolios. I don't know.</p>	<p>A lot of Reggio things are ongoing and long-term, so the assessment tools they have used in the past are one day, but maybe they could come every few days to gain a better idea of what is ongoing.</p>	<p>I think a person who comes to a Reggio school, they're going to observe that children are in a free space. No bright colors.</p>	<p>I think that just watching the children's development, I'd like to see a long term study of their development to see that when they are pre-k, how are they going to be when they are in 8th grade. I'd like to see the outcome of that</p>	<p>I would say first off, that if you're going to do an assessment it can't be just one time. You can come one time and a teacher isn't feeling well or a student isn't feeling well but they still came or aren't showing their</p>	<p>I'm not sure.</p>

						versus going through a traditional program.	best that day but the next day it's a different story. Assessing us for one day it doesn't give enough information on the center itself. As far as measuring I would say the learning, whether its planned or unexpected. Students engagement in their learning, the measurement should be based on not much of the teacher but the student.	
<i>Is there anything else you'd like to share that I did not ask?</i>	I don't think so.	I like the Reggio more because it is more relaxing. At first I was stumped how the children would learn, but they we started to see	I don't think so.	No, I think this was a great interview.	Not really, you have really great interesting questions.	I came from a non Reggio program for 13/14 years but this is just a wonderful way to be with children. It is a great environment for children, I wish	If anything I would say that Reggio is a different approach, that you actually have to use it and implement it and see how it is and if it fits, it's not	I'm very inspired and happy with this way to teach because it is amazing how kids can learn through anything, by

		how they explored to learn. And they love doing it.				every child could get to experience it. We need more Reggio inspired schools. That would be a dream wouldn't it!	something you just up and change. We were pushed into it and we didn't really have enough time to understand it. So we're still learning as we go. We learn a lot through training. Every semester is different. Different people say different things too. Like licensing and Reggio. So we have confusion between licensing, UWBB, TRS. There are times where they conflict.	exploring. You can see things differently totally differently than a traditional way to teach. I think they get more intelligent. Everything is little by little, making connections. We implement a lot in the class.
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SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

Appendix E

Teacher Interview Thematic Analysis Summary

- 1) Curriculum is child lead – follow the interest of the child. Teachers take note of/pay attention to the children's interest and incorporate them into the classroom to provoke inquiry to expand learning and foster a love of learning.
- 2) Teacher acts as an observer and guide, moving throughout the room, placing invitations in the classroom to provoke child interest and exploration, asking questions as students explore, documenting student learning. Teachers sometimes model exploration.
- 3) Teachers use realistic materials, materials that are natural and found in the world versus plastic and fake materials. Teachers felt that children can engage better when materials are realistic and relevant, things that are hands-on. Materials have purpose and can be used in more than one way (open-ended). Things in the class are at the child's level and available for exploration. Builds responsibility and sense of community and citizenship. Children take better care of materials than they would of artificial items.
- 4) The classroom environment is inviting, warm, nurturing, more home-like, homey, and comfortable. A place where teachers and children want to be and enjoy being. Lots of things are also done outdoors, bringing the outdoors inside. Aesthetically pleasing.
- 5) The classroom is "their" classroom (the children's), and is not directed or taken over by the teacher. Children explore and learn at their pace. Children have choice within the classroom and can move from activities freely.
- 6) Learning is not thematic or based on a theme or unit to cover, but on child interest, integrating various subject areas at once. Learning can cover a long-term project based on student interest and things relevant to the child's immediate world are brought into the learning. Children have time to finish what they are doing.
- 7) Children learn through engaging their senses, playing, exploring, social interaction, watching and learning from each other. Teachers encourage empathy, teamwork, sharing, caring when children are at the "me, me, me" stage.
- 8) Documentation is available to students, such as photos and dictation of events to reflect on their learning.
- 9) Directors were noted to be hands-on, actively involved in supporting teachers and being aware of the occurrences in the classroom. Teachers really seemed to appreciate having directors that enjoyed being actively involved and that supported exploratory learning practices, trusting in teachers.
- 10) Traditional assessments like ITERS-R, ECERS-R, and CLASS are not viewed as threatening, yet it was noted that these assessments come across to some as inauthentic, not capturing the entirety of the classroom in the short period that the

class is observed. Teachers would like for more ongoing visits rather than one-day drop-ins to better capture the growth of students, progress of classroom, and true depiction of quality. Some teachers also noted confusion between the different requirements of different standards such as Reggio and Texas State standards (they clash, do not align).

SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

Appendix F

Consultant Focus Group Transcript

Moderator: What is your ethnicity?

C1: Hispanic

C2: African American

Moderator: What is your highest level of education?

C1: Bachelors degree

C2: Bachelors degree

Moderator: How long have you been a consultant?

C1: Um, I am going onto fourteen years

C2: The same (fourteen years)

Moderator: How long have you been working with United Way Bright Beginning's?

C1: Ten years

C2: Since 2009 (seven years)

Moderator: Now I have more specific questions about exploratory learning and Reggio inspired practices, which is an exploratory learning method. So how would you describe Reggio-inspired practices?

C1: In Reggio-inspired practices you see all the protagonists as competent and capable, and here we are talking about children, teachers, families, the community.

C2: In connection, it is a shared approach where each of the protagonists have a right to contribute to the teaching and learning process.

Moderator: Can you describe the differences between the set-up of a Reggio-inspired practices classroom versus a traditional pre-kindergarten classroom?

C1: I think they both share equal power, it is very important to know that.

C2: Elaborating more on the sharing of equal power, then that means that the environment reflects the community, it reflects the families that you serve, it reflects the children as well as the teachers. Each culture, each background, whatever that community has to offer is represented in that environment.

- Moderator: Can you give an example of when you aided a teacher in setting-up their classroom to be more Reggio-inspired? What changes did you make to the classroom?
- C1: The environment is the third teacher.
- C2: I'll elaborate on that by answering the second part of your question. As an example, as a consultant we are invited to share in the process of planning the environment, becoming very mindful of observing the children and the community itself, the culture of the families, so if it involves making the atmosphere more home-like which is what we hear most often from teachers, it would be in essence making the features of home-like environments such as soft furnishings, making the environment user friendly for people, adults seating, all the details that sometimes are forgotten in traditional classrooms, we're very mindful of the home-like environment, photos in frames, places for teachers to place things, places for children to have their belongings, making materials accessible, having rugs that are soft and inviting, everything from the smell to the overall tone of the environment.
- Moderator: How does the classroom set-up impact the quality of a Reggio-inspired classroom environment?
- C1: With this question, it is like children, teachers, and parents have the opportunity to make decisions and they work together as a team, not separated or isolated, they have the same goal which is to guide the child to do the best, not only in education, but in life. Also providing opportunities for exploration on their own choices.
- C2: That's what I would say too.
- Moderator: What does a quality Reggio-inspired learning environment look like to you? So if you were to walk into a classroom, what are you expecting to see that would tell you that this is a quality place?
- C1: What I would see is that children are engaged in their learning, learning that is intentional to learn another skill, something that they are really involved in and interested in.
- C2: To piggy back on that, definitely an environment of trust, where teachers are not engaged in this top down approach where the teachers' voice is the only voice that you hear. If children are engaged in what they are doing, you'll feel that, you'll know that. The environment will be there, the material will be available for them to access. Even the very youngest of

our citizens, the infants, you know when a child has a sense of belonging there. You can tell by the parents at drop off and pick-up times that the climate exists.

Moderator: How do you assess the quality of a teacher's classroom? Is there a tool you use?

C1: We have different tools, ITERS, ECERS, CLASS. We also listen to all the protagonists, children, teachers, parents, just to be able to communicate and reflect on what is happening.

C2: Do you know what those letters are?

Moderator: Yes I do.

C2: Oh ok.

Moderator: Can you describe the differences between Reggio-inspired teaching practices versus traditional teaching practices for pre-kindergarten?

C1: Oh yes! You know it's like in the traditional way of teaching the teacher is the only one who tells what happens, directing activities all day long. Instead in Reggio Emilia, children make choices, you let them make choices and that's what we want the curriculum to be, to focus on the interests of the child.

A third consultant arrives for the focus group. The moderator explains the purpose of the focus group and an overview of what has been discussed.

Moderator: What is your ethnicity?

C3: Caucasian

Moderator: What is your highest level of education?

C3: I have a BA, two actually

Moderator: How long have you been a consultant?

C3: Two years

Moderator: How long have you been working with United Way Bright Beginning's?

C3: As a consultant for two years, but as a director for eight years.

- Moderator: Ok great, you have all been great so far, thank you. The question we're on right now is "can you describe the differences between Reggio-inspired teaching practices versus traditional teaching practices for pre-kindergarten?" and what has been said so far is that traditional is more teacher-led where Reggio is more child focused.
- C3: Yes, absolutely.
- C2: And additionally, the parents as well. They have a role to contribute into the teaching and learning process.
- Moderator: Can you expand more on how those parents are incorporated?
- C2: From the very beginning when the parent is doing the research about a center, to know that information is there for them, and then when they do the on boarding to a center, to know that the center sees them as a person who is bringing a life to them and has something to contribute to the entire program.
- Moderator: Can you give me an example of a Reggio-inspired practice you guided a UWBB teacher to implement in their pre-kindergarten classroom?
- C1: We are really big on documenting children's learning because it really makes what teachers are doing visible and it helps the children to see what they are learning about and empowers them to learn more.
- C2: Parents number one question is "what did you do today?" when they pick up their child, so that's what it's there for as well to make the learning visible so that parents can contribute that documentation. We're also encouraging our teachers to provide a space for parents to write their thoughts on the documentation itself, to have dialogue between those two entities. Children are able to revisit the learning and tell back the occurrence, so it a great bridge between all three of the protagonists.
- C1: Another thing we ask the teachers is to provide pictures of the children's families (in the classroom) because that is really important to them. Sometimes they need to see their faces. You wouldn't believe how many times we have heard from teachers saying "that really helps."
- C3: I agree completely, and have experience with and witnessed everything that has been said. One of the first parts of the process is to meet with the teacher and we ask them what their needs are, what their point of view is so that it is really collaborative and not just us dictating what it looks like because there are some fundamental things that go into what a classroom

can be and look like, and feel like, and what are the specific needs of a particular program in regards to the family and children.

Moderator: When you assess a pre-kindergarten classroom, what practices do you expect to see that are Reggio-inspired when you walk into the classroom?

C1: We expect to see like a machine running. For example, interesting things happening, studies, we call provocations, they are intentional for the children's learning.

C2: The tools that we use are not separate from being Reggio-inspired they're integrated. For example, the health and safety aspect of ITERS and ECERS is very important because you can't have quality without the basics as well. What we do is a very beautiful job of synchronizing all the tools in connection with the approach itself, so as you start to enhance the program, you get away from the basics being the only thing you're doing, and then it becomes this beautiful machine of long term studies and documentation, and children and families personalities being integrated into the classroom. It's a layered approach and all those things go hand-in-hand together.

Moderator: Do you think the ITERS-R, ECERS-R, and/or CLASS assessments accurately reflect the quality of pre-kindergarten classroom that are Reggio-inspired? Why or why not?

C1: All those tools that we use are best practices. Reggio Emilia is best practices, it is not separated. That's what we're really looking for.

C2: What the tools are able to accomplish is that they provide the hard data, the numbers, the scores, scales, ranges. Being Reggio-inspired is more of an organic process that doesn't always come with a number, perhaps, it doesn't always come with the data, so in order to validate it, there is a marriage between the hard data and the beauty.

C3: I would add the tools are a concrete way for teachers and others who are investing into the program to operate from and they're meant to be supportive saying here is the assessment, here is where you are, and how can we go beyond. We don't just want to stay with the minimum baseline or standard, we want to keep increasing. The other thing about it too is they're very strength based, it's not that you're deficient, it's here where you are and how can we work together to become better.

Moderator: What do you think should be measured to gain a better understanding of the quality of Reggio-inspired environments?

- C1: Documentation that is present.
- C2: The only thing I would add to that is continued research. In order to describe what Reggio means you have to continue and keeping oneself abreast to the trends and being innovative to embrace this approach. Especially in the North American world, in order to continue to embrace it you have to keep up with it.
- C1: And believe in it, otherwise you aren't going to see how you can change children's lives.
- C3: You have to have a continual reflective practice that includes the voice of everyone who is affected.
- Moderator: Thank you for sharing your knowledge and thoughts!

Appendix G

Consultant Focus Group Thematic Analysis Summary

- 1) Exploratory learning is a shared approach between teachers, children, parents and families, and the community. Everyone has a role to contribute. There isn't a top-down approach where only the teachers' voice is heard; instead everyone is engaged and has equal power. By approaching early childhood education in this manner, there is a greater sense of trust and partnership where every member is valued. Additionally, an exploratory learning classroom reflects the greater community.
- 2) The goal of exploratory learning is not merely to prepare young children for future educational endeavors, but to educate the whole child to be successful in education and in life.
- 3) Assessment primarily occurs through documentation. Documentation makes the learning visible to every stakeholder. Moreover, parents' primary question at the end of the school day is "what did you do today", thus having visible documentation for parents and families to see what is occurring in the classroom is imperative. However, it is also important for parents to be able to provide their own comments and feedback on their child's learning through documentation as well. Other assessments such as the ITERS-R, ECERS-R, and CLASS are formative and are used as a means of reflecting to improve practice
- 4) Consultants mentor teachers by considering the teachers needs and environment. The consultants do not simply tell teachers what to do and how to do things, they ensure they are listening to teachers, responding to their needs, approaching changes to practices and the environment in a partnership through collaboration rather than dictation.
- 5) High quality educational environments meet not only the health and safety needs of young children, which are the basic foundations, they also meet the individual needs of the children by including their interests and providing them with opportunities to explore and make choices. In contrast to other educational environments, exploratory learning environments are more organic in how curriculum emerges from child interests and choices.

Appendix H

Pilot Instrument

SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

Rutter Exploratory Learning Environmental Rating Scale (RELERS) – Prekindergarten

by Amanda Rutter

Child is at the center of the curriculum

	1	2	3	4	5
1) Children freely choose their activities and follow their own interest.	Children do not choose their center/activity freely; rather, teachers assigns children to a center/activity to engage in, and children do not display an interest in centers/activities.	Children choose which center/activity they will engage in with a lot direction from teachers, and few children display an interest in the centers/activities they have chosen to explore.	Children choose which center/activity they will engage in with some direction from teachers, and some children display an interest in centers/activities.	Children choose which center/activity they will engage in with minimal direction from teachers, and most children display an interest in the centers/activities they have chosen to explore.	Children choose which center/activity they will engage in without direction from teachers, and children display an interest in the centers/activities they have chosen to explore.
2) Children have a sense of control.	Children ask for permission from teachers to engage with learning materials. Children do not display confidence in the classroom, and seek guidance from teachers on how	A few children do not ask for permission from teachers to engage with learning materials. A few children display confidence in the classroom, moving from activity and	Some children do not ask for permission from teachers to engage with learning materials. Some children display confidence in the classroom, moving from activity and	Most children do not ask for permission from teachers to engage with learning materials. Most children display confidence in the classroom, moving from activity and	Children do not ask for permission from teachers to engage with learning materials. Children display confidence in the classroom, moving from activity and engaging with

	they may engage with learning materials.	engaging with learning materials as they please. Most children ask for permission and guidance from teachers.	engaging with learning materials as they please. About half of the children ask for permission and guidance from teachers.	engaging with learning materials as they please. A few children ask for permission and guidance from teachers.	learning materials as they please.
	1	2	3	4	5
3) The day consists largely of free play. Children explore at their own pace.	None the day is free play. Children explore learning materials at the directions and pace set by the teacher.	A minimal amount of the day is free play. Children explore some learning materials at their own pace, others at the teacher's pace, and children are not given adequate time from teachers to explore centers/activities.	Some amount of the day is free play. Children explore learning materials mostly at their own pace and are given adequate time from teachers to explore centers/activities.	Most of the day is free play. Children explore learning materials at their own pace and are given adequate time from teachers to explore centers/activities.	Most of the day is free play. Children explore learning materials at their own pace and are given plenty of time from teachers to explore centers/activities.

Environment is set-up intentionally for exploration

	1	2	3	4	5
4) Multiple centers/activities are open for exploration.	Children are not provided opportunities to engage in centers/activities' rather. children are engaged by teachers in whole group work.	A few centers/activities in the classroom are open for students to engage in different learning experiences. Most centers are closed or marked as "off-limits."	Some centers/activities in the classroom are open for students to engage in different learning experiences. Some centers are closed or marked as "off-limits."	Most centers/activities in the classroom are open for students to engage in different learning experiences. One or two centers are closed or marked as "off-limits."	All centers/activities in the classroom are open for students to engage in different learning experiences. No centers are closed or marked as "off-limits."
5) Activities are varied, not based on theme.	Centers/activities incorporate learning materials that are based on one theme such as winter in January.	A few centers/activities incorporate multiple learning materials and are not based on a "theme"; however, most centers/activities are thematic.	Some centers/activities incorporate multiple learning materials and are not based on a "theme"; however, half of the centers/activities are thematic.	Most centers/activities incorporate multiple learning materials and are not based on a "theme"; however, one or two centers/activities are thematic.	All centers/activities incorporate multiple learning materials and are not based on a "theme" such as winter in January.
6) Activities are purposeful and open-ended.	Centers/activities are not open-ended and cannot be engaged with in	A few centers/activities are organized so that they are open-	Some centers/activities are organized so that they are open-	Most centers/activities are organized so that they are open-	All centers/activities are organized so that they are open-

	several ways. Children are limited to engage with centers/activities in only one manner.	ended, enabling children to explore materials in multiple ways.	ended, enabling children to explore materials in multiple ways.	ended, enabling children to explore materials in multiple ways.	ended, enabling children to explore materials in multiple ways.
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Children form knowledge through exploration

	1	2	3	4	5
7) Children are provided opportunities to explore, experiment, and manipulate learning materials with their senses.	Children are not able to manipulate materials at centers/activities.	At a few centers/activities, children can freely manipulate materials using their senses of sight, touch, taste, smell, and hearing to engage in exploration.	At some centers/activities, children can freely manipulate materials using their senses of sight, touch, taste, smell, and hearing to engage in exploration.	At many centers/activities, children can freely manipulate materials using their senses of sight, touch, taste, smell, and hearing to engage in exploration.	At all centers/activities children can freely manipulate materials using their senses of sight, touch, taste, smell, and hearing to engage in exploration.
8) Children are encouraged to reason as they explore.	Teachers do not encourage children to talk through and explain their reasoning.	Teachers engage in conversations with a few children, encouraging them to talk through and explain their reasoning when they are exploring.	Teachers engage in conversations with some children, encouraging them to talk through and explain their reasoning when they are exploring.	Teachers engage in conversations with most children, encouraging them to talk through and explain their reasoning when they are exploring.	Teachers engage in conversations with all children, encouraging them to talk through and explain their reasoning when they are exploring.

				Teachers ask children questions such as “who, what, where, when, why, and how” and connecting classroom activities to children’s prior knowledge and experiences.	Teachers ask children questions such as “who, what, where, when, why, and how” and connecting classroom activities to children’s prior knowledge and experiences.
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Teacher acts as a guide/facilitator

	1	2	3	4	5
9) Teachers allow children to openly explore and do not provide children with directive instruction.	Teachers provide children with directive instruction, telling them what to engage in and how to engage at centers/activities.	Teachers provide children with a lot direct instruction, and allow children to openly explore in a few centers/activities.	Teachers provide children with some direct instruction, and allow children to openly explore in some centers/activities.	Teachers provide children with minimal direct instruction; rather, they mostly let children openly explore centers/activities, allowing children to move from centers/activities at their own volition.	Teachers do not provide children with direct instruction; rather, they let children openly explore centers/activities, allowing children to move from centers/activities as they choose.

	1	2	3	4	5
10) Teachers model and demonstrate.	Teachers do not model or demonstrate ways students can manipulate any learning materials.	Teachers model or demonstrate the only ways in which children can and are expected to engage with the learning materials.	Teachers model or demonstrate ways children <u>can</u> manipulate learning materials. For some of the centers/activities children are not limited in how they can manipulate learning materials.	Teachers model or demonstrate ways children <u>can</u> manipulate learning materials. For most centers/activities children are not limited in how they can manipulate learning materials.	Teachers model or demonstrate ways children <u>can</u> manipulate learning materials to provoke additional exploration, but do not limit the ways children can manipulate learning materials.
11) Teachers guide children to find the answers to their own questions.	Teachers do not guide children to find the answers to their questions; rather they directly answer children's questions.	Teachers seldomly guide children to find the answers to their own questions; they mostly directly answer children's questions.	Teachers frequently guide children to find the answers to their own questions; they sometimes directly answer children's questions.	Teachers mostly guide children to find the answers to their own questions; they rarely directly answer children's questions.	Teachers guide children to find the answers to their own questions.
12) Teachers present learning materials in an inviting manner.	Teachers do not place learning materials in inviting manners and/or invitations at each	Learning materials at a few of the classroom centers/activities are displayed in	Learning materials at half of the classroom centers/activities are displayed in	Learning materials at most of the classroom centers/activities are displayed in	Learning materials at all centers/activities are displayed in inviting manners. Teachers

	center/activity to provoke child interest and foster exploration. Learning materials are either not displayed or look haphazardly displayed.	inviting manners. Teachers place learning invitations at a few centers/activities to provoke child interest and foster exploration.	inviting manners. Teachers place learning invitations at some centers/activities to provoke child interest and foster exploration.	inviting manners. Teachers place learning invitations at most centers/activities to provoke child interest and foster exploration.	place learning invitations at each center/activity to provoke child interest and foster exploration.
13) Teachers move through the room, observing exploration.	<p>1</p> <p>Teachers do not move throughout the classroom to observe students engaging in exploration. Teachers are stationary.</p>	<p>2</p> <p>Teachers seldomly move throughout the classroom to observe students engaging in exploration. Teachers are mostly stationary.</p>	<p>3</p> <p>Teachers sometimes move throughout the classroom to observe students engaging in exploration. Teachers sometimes are stationary.</p>	<p>4</p> <p>Teachers frequently move throughout the classroom to observe students engaging in exploration. The teacher is mostly stationary at times, mostly to document child learning.</p>	<p>5</p> <p>Teachers are consistently moving throughout the classroom to observe students engaging in exploration. The teacher is not stationary for very long unless documenting child learning.</p>

Environment is rich

	1	2	3	4	5
14) Learning materials are relevant to children.	Learning materials in the classroom do not have relevance to the children.	A few of the learning materials in the classroom are relevant to children.	Half of the learning materials in the classroom are relevant to children.	Most of the learning materials in the classroom are relevant to children.	All learning materials in the classroom are relevant to children by connecting to children's interests, home lives, and to events occurring within the early childhood center.
15) Learning materials are realistic.	All of the learning materials in the classroom are fake and made of manmade materials such as plastic rather than being realistic.	A few of the learning materials in the classroom are realistic, but the majority of classroom materials are fake objects made of manmade materials such as plastic.	Half of the learning materials in the classroom are realistic made of non-manmade material such as wood, metal, and glass, and some are fake objects made of manmade materials such as plastic.	Most of the learning materials in the classroom are realistic made of non-manmade material such as wood, metal, and glass, and some only a few objects are made of manmade materials such as plastic.	All of the learning materials in the classroom are realistic, naturally found in the world (real objects made of non-man made materials such as wood, metal, and glass) versus fake objects made of manmade materials such as plastic.

	1	2	3	4	5
16) Learning materials are well supplied.	Not enough learning materials are available for multiple children to engage at the same center/activity at the same time. Only one child can work at one center/activity at a time.	A few of the centers/activities have enough learning materials available for multiple children to engage at the same center/activity at the same time.	Half of the centers/activities have enough learning materials available for multiple children to engage at the same center/activity at the same time.	Most of the centers/activities have enough learning materials available for multiple children to engage at the same center/activity at the same time.	There are more than enough learning materials available at all centers/activities for multiple children to engage at the same activity/center at the same time.
17) Learning materials are varied (variety) at each center/activity.	Learning materials at centers/activities are not varied, nor do they integrate various subject areas and themes at once.	Learning materials at a few of the centers/activities are varied integrating various subject areas and themes; however, most of the centers/activities do not offer a variety of materials.	Learning materials at half of the centers/activities are varied integrating various subject areas and themes (based on student interest) at once.	Learning materials at most of the centers/activities are varied integrating various subject areas and themes (based on student interest) at once.	Learning materials at each center/activity are varied integrating various subject areas and themes (based on student interest) at once.
18) The environment is home-like.	The learning environment does not feel home-like. There are no soft furnishings or toys	The learning environment is not home-like; however, there are a few soft furnishings	The learning environment is somewhat home-like with some soft furnishings and soft	The learning environment is mostly home-like with some soft furnishings and soft	The learning environment is home-like and incorporating soft furnishings and

	accessible to children.	and soft toys accessible to children.	toys accessible to children.	toys accessible to children.	cozy areas such as rugs, carpets, pillows, cushions, flowers and plants, curtains, cloth chairs and couches, and hard furnishings made of wood and metal.
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Activities lead to socialization

	1	2	3	4	5
19) Children have opportunities to choose their playmates and practice social skills.	Children do not have opportunities to choose their playmates and practice social skills.	Children are provided few opportunities to choose their own playmates and practice social skills.	Children are provided some opportunities to choose their own playmates and practice social skills.	Children are provided several opportunities to choose their own playmates and practice social skills.	Children are provided many opportunities to choose their own playmates and practice social skills.
20) Teachers encourage children to interact and communicate.	Teachers do not encourage children to interact and communicate with one another and do not provide children	Teachers minimally encourage children to interact together and communicate by providing one or two opportunities	Teachers encourage children to interact together and communicate by ensuring that at half of the centers/activities	Teachers encourage children to interact together and communicate by ensuring that at most centers/activities children can work in	Teachers encourage children to interact together and communicate by ensuring that at every centers/activities

	opportunities to work in small groups.	for children to work in small groups.	children can work in small groups.	small groups.	children can work in small groups.
21) Teachers guide conversation as children explore.	<p>1</p> <p>When children are struggling to communicate with one another, teachers do not guide the conversation.</p>	<p>2</p> <p>Teachers seldom ask leading questions to children about what they are exploring to begin conversations amongst the children.</p>	<p>3</p> <p>Teachers ask some leading questions to children about what they are exploring to begin conversations amongst the children.</p>	<p>4</p> <p>Teachers frequently ask leading questions to children about what they are exploring to begin conversations amongst the children.</p>	<p>5</p> <p>Teachers ask leading questions to children about what they are exploring to begin conversations amongst the children, and teachers mainly listen to the conversations amongst children, guiding the conversation to provoke additional learning.</p>

Children reflect on their learning

22) Teachers engage in conversation with children about their learning and document these conversations.	<p>1</p> <p>Teachers do not ask children questions about what they explored and learned.</p>	<p>2</p> <p>Teachers ask a few children questions about what they explored, but do not ask children</p>	<p>3</p> <p>Teachers ask half of the children questions about what they explored and learned, but</p>	<p>4</p> <p>Teachers ask most children about what they explored and learned, documenting most</p>	<p>5</p> <p>Teachers ask each child questions about what they explored and learned, and</p>
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		questions about what they learned, and do not document the conversation.	only document some of the conversations.	of the conversations through dictation or anecdotal notes.	document the conversation through dictation or anecdotal notes.
	1	2	3	4	5
23) Teachers use documentation to connect exploring to previous learning experiences.	Teachers do not use documentation within the classroom to connect what children are currently exploring to their previous learning experiences.	Seldom , teachers use documentation within the classroom to connect what children are currently exploring to their previous learning experiences.	Sometimes , teachers use documentation within the classroom to connect what children are currently exploring to their previous learning experiences.	Often , teachers use documentation within the classroom to connect what children are currently exploring to their previous learning experiences.	Teachers use documentation within the classroom frequently , such as reading the captions of the documentation and asking questions, to connect what children are currently exploring to their previous learning experiences.
24) Documentation of learning experiences is visible in the classroom and meaningfully annotated.	1 Classroom does not have any visible and meaningful examples of documentation of the learning	2 Classroom has a few visible examples of documentation of learning experiences.	3 Classroom has some visible examples of documentation of learning experiences. Most	4 Classroom has several visible examples of documentation, flat and 3D with captions, of	5 Classroom has many visible examples of documentation, flat and 3D with captions, of

	experiences.	Documentation does not include captions of the learning that occurred and is not at the child's eye level. Documentation does not include a space for parents to contribute their thoughts and comments of their child's learning.	documentation includes captions of the learning that occurred, and is only sometimes at the child's eye level. A few pieces of documentation include a space for parents to contribute their thoughts and comments on their child's learning.	learning experiences. Documentation is located throughout the classroom, and is for the majority, at the child's level as well as near the classroom entry for parents to view. Some documentation includes a space for parents to contribute their thoughts and comments on their child's learning.	learning experiences. Documentation is located both at the child's level through the classroom for children to recall learning experiences as well as near the classroom entry for parents to view. Documentation includes a space for parents to contribute their thoughts and comments on their child's learning.
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Record instrument scores:

- | | |
|-----------|-----------|
| 1) _____ | 13) _____ |
| 2) _____ | 14) _____ |
| 3) _____ | 15) _____ |
| 4) _____ | 16) _____ |
| 5) _____ | 17) _____ |
| 6) _____ | 18) _____ |
| 7) _____ | 19) _____ |
| 8) _____ | 20) _____ |
| 9) _____ | 21) _____ |
| 10) _____ | 22) _____ |
| 11) _____ | 23) _____ |
| 12) _____ | 24) _____ |

Assessor Name _____

Date: _____

Center Name: _____

Teacher(s) Name(s): _____

Number of children in class _____

Total = _____

Total divided by 24 =

Final Score**Determining Rating:**

Take the final score, and compare to ratings below to determine level of quality.

- 4 – 5 Excellent quality
- 3 – 4 Good quality
- 2 – 3 Minimal quality
- 1 – 2 Poor quality

SCALE MEASURING EXPLORATORY LEARNING ENVIRONMENT

Appendix I

Assessor Interview Transcripts

	A1	A2
<i>What is your ethnicity?</i>	Caucasian	Asian
<i>What is your highest level of education?</i>	Master's degree, however is a doctoral candidate	Doctorate degree
<i>On a scale of 1 2 3 4 5 1 being very hard and 5 being very easy, how would you rate the ease of use in pre-kindergarten classrooms?</i>	In terms of the constructs and the way they are designed, and the flow it worked really well. In the actual instrument that I used it was difficult because I kept on having to flip from page to page, so we might want to look at how we can do it, the physical instrument itself to do a flip over, like a double staple. I would rate it a 4.	I would say number 4, because when we go into detail, we can have something in the middle so we want to be more specific of what you are trying to observe.
<i>Did you experience any difficulties in utilizing the instrument? If yes, can you describe them?</i>	The actual act of marking the instrument, it was easy.	In general, the instrument works very well in the pre-k classroom. Some items, I took some notes, it's not that they are difficult, it's that it needs to be more specific. Maybe quantified a little bit.
<i>Was the time-frame for implementation of the scale realistic and feasible?</i>	Yes. I think the main thing was once you get the physical space, I looked at the physical environment first, and then I looked at the teacher child interaction, it was a lot easier to do it that way.	Yes. The time frame was very reasonable and practical too.
<i>Were the instructions for the instrument clear? If no, can you describe what was unclear?</i>	They were very clear.	That's a very good question because this is a pilot study. In general they were clear, in terms of specific items what you were looking for, for instance in terms of the concept we are looking at quality, but sometimes it depends on the quantity. Some classes have three centers, but some have seven centers, so my concern was how to you look at the quality and quantity, how do you find

		the balance in-between.
<i>Were the constructs of the instrument clear? If no, can you describe what was unclear?</i>	They were very clear. Plus having the training helped.	The construct was very well, it makes sense, each dimension. It does well to describe the whole classroom environment.
<i>Were the 5 point ratings for the instrument clear? If no, can you describe what was unclear?</i>	I think we discussed it during the training, just about what's the difference between minimal and few, but you gave us the fractions and how to look at it and dividing up the kids by fractions.	It was clear doing the five, but sometimes you have to think about something in between. You think should I give them a four? It's between four and five. One, two, and three were very distinguished.
<i>Was calculating the total score of the instrument clear? If no, can you describe what was unclear?</i>	It's clear.	That was very clear.
<i>Would you suggest anything on the instrument be re-worded?</i>	Just that realistic becomes naturalistic when you talk about materials in the classroom. That could be confusing for whoever is doing the assessment for you could have a realistic looking plastic thing rather than a natural product.	That's a very good question. I was just looking at the big picture but I haven't gone deeper. I would say the quantity. And also the senses, you might have all engaged in one center, but are the involved overall well in all centers in the classroom.
<i>Would you suggest other changes to the instrument?</i>	Like we discussed about having the teachers name, teacher-child ratio, the date of observation, and oldest and youngest birthday because a lot of pre-k classes that we deal with have some 3 year olds which could skew the way teachers interact with kids.	I think the instrument works well. When you get into the classroom you feel the kids are free playing so I think it goes well with the Bright Beginnings program. Maybe think of quantity in a future study.
<i>Is there anything else you would like to share that I did not ask you?</i>	No. Like I mentioned about the physical environment, you might want to make it clear to score what you're physically seeing rather than being told by the teacher or director. Look at the reality of the	It was a very good experience to go into the classroom and look at how kids explore because it's what we talk about but we don't number it. Another thing, one thing I want to question is we want

	room rather than the context.	kids to have more time to explore and discover and scaffold children, but it is hard to document. It is necessary but it is like you said we need two teachers, one is leading discovery while the other is in charge of documentation, for this section, the last section, was difficult. Maybe in the future we can think about this section and word it differently. I bet if you ask them after the observation if they do documentation they will say yes. You don't want to see teachers just writing, but it's important. Another one is the parent comments section, it's kind of new, I spoke to a teacher and they said it is a good idea but parents are busy, some parents like to write, some don't, they speak different languages like Spanish and Chinese so the teacher and child may not recognize. But that's about it, it was a very good experience and I think it works very well.
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Appendix J

Assessor Interview Thematic Analysis Summary

- 1) The assessors conveyed an overall liking of the instrument. The constructs of the instrument were very clear and concise. The implementation of the pilot instrument worked well. With some additional edits such as physical changes to instrument for ease of use and exactness to make the instrument more functional or to clarify a few items will lead to an useful assessment tool for the early childhood community, particularly exploratory learning environments.
- 2) The assessors liked having descriptors in the middle ranges to help make distinctions between ratings. One assessor found that 4 and 5 were sometimes hard to distinguish between and could use some clarification or more clear division.
- 3) There was some confusion about whether to look for quantity or quality, particularly concerning play stations. The researcher should consider clarifying the directions of the instrument and the quantification of certain instrument items.
- 4) Assessing the documentation items on the instrument were slightly difficult. The instrument is implemented in a one-time setting; however, the documentation in classrooms builds throughout the year. Moreover, teachers are not engaged in documenting children's learning every minute of the day. It was also noted that parent contributions to documentation may be an aspect of the instrument to remove for there are several factors that influence parent participation such as liking to write, time given to contribute to documentation, and language barriers.
- 5) In the future, the researcher should clarify with assessors to score only what they **see**, not what they are told goes on by directors or teachers.

Appendix K

IRB Approval

UNIVERSITY of HOUSTON

DIVISION OF RESEARCH

November 20, 2014

Dr. Nicole Andrews
Curriculum and Instruction

Dear Dr. Nicole Andrews,

The University of Houston's Institutional Review Board, Committee for the Protection of Human Subjects (1) reviewed your research proposal entitled "Evaluation of Bright Beginnings Program" on October 17, 2014, according to federal regulations and institutional policies and procedures.

At that time, your project was granted approval contingent upon your agreement to modify your protocol as stipulated by the Committee. The changes you have made adequately fulfill the requested contingencies, and your project is now **APPROVED**.

- **Approval Date: November 20, 2014**
- **Expiration Date: November 19, 2015**

As required by federal regulations governing research in human subjects, research procedures (including recruitment, informed consent, intervention, data collection or data analysis) may not be conducted after the expiration date.

To ensure that no lapse in approval or ongoing research occurs, please ensure that your protocol is resubmitted in RAMP for renewal by the **deadline for the October, 2015** CPHS meeting. Deadlines for submission are located on the CPHS website.

During the course of the research, the following must also be submitted to the CPHS:

- Any proposed changes to the approved protocol, prior to initiation; AND
- Any unanticipated events (including adverse events, injuries, or outcomes) involving possible risk to subjects or others, within 10 working days.

If you have any questions, please contact Samoya Copeland at (713) 743-9534.

Sincerely yours,



Dr. Daniel O'Connor, Chair
Committee for the Protection of Human Subjects (1)

PLEASE NOTE: (1) All subjects must receive a copy of the informed consent document. If you are using a consent document that requires subject signatures, remember that signed copies must be retained for a minimum of 3 years, or 5 years for externally supported projects. Signed consents from student projects will be retained by the faculty sponsor. Faculty are responsible for retaining signed consents for their own projects; however, if the faculty leaves the university, access must be possible for UH in the event of an agency audit. (2) Research investigators will promptly report to the IRB any injuries or other unanticipated problems involving risks to subjects and others.

Protocol Number: 06060-01

Full Review: X

Expedited Review:

316 E. Cullen Building Houston, TX 77204-2015 (713) 743-9204 Fax: (713) 743-9577

COMMITTEES FOR THE PROTECTION OF HUMAN SUBJECTS.