



Home Experiences that Foster Readiness for Learning Whole Numbers: An Exploratory Study

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Children are best understood in the context of their family and the children's daily experiences with their families affect their learning. Families provide teachers with personal and deep knowledge of the child guides teachers in helping children learn whole numbers. Families feel supported when they are included in the planning process of their child's learning. Personal stories of parents will give light to the following: (1) their current practices at home in teaching whole numbers, (2) the context of their practices, (3) appraisal of whole numbers at home. The stories of parents and their practices guided the teaching and learning process in a preschool classroom, most especially with regard to learning whole numbers.

This study aimed to explore the context of parent's teaching practices of whole numbers so as to draw implications for basing teaching on prior learning experiences of children. The description was based on interviews with fifty parents. The study concluded that: (1) To effectively plan for math instruction, understanding the prior knowledge of children and parents in rote counting and number recognition thru parent-teacher meetings are vital for effective teaching. (2) Creation of a familiar learning environment with familiar mathematical learning experiences at the onset helps the teaching-learning process. (3) Collaboration between parents and teachers are necessary in the assessment design of rote counting and number recognition. (4) Ongoing parent math workshops are helpful to deepen the understanding of mathematics development in young children. The present research supports the importance of home experiences in the acquisition of mathematics development.

Key Words: early childhood; learning; math; home experiences; numeracy; preschool

1. INTRODUCTION

A child, upon entering kindergarten receives a wide range of experiences from his home environment most specially from family members. The viewpoint that parents as the child's first teacher is very well accepted by

various programs (Barbara Bush Foundation for Family Literacy, 1989). Research shows that home literacy experiences and children's acquisition of literacy have resulted in strong recommendations for home practice (Fletcher and Reese, 2005). According to Le Fevre et al. (2009), the field of children's early numeracy



and mathematics development is much less developed and documentation of the specific experiences through which mathematical knowledge is acquired outside of school is limited. Le Fevre et al. (2009) further explained that only a few empirical studies have examined relations between caregivers' reports of home numeracy experiences and children's math achievement in an approach similar to that in the early literacy domain.

The nature of a child's environment affects a child's learning, and according to Bredekamp and Copple (2009) development and learning result from a dynamic and continuous interaction of biological maturation and the environment. The positive disposition of a child is also a product of family relationships. Children develop best when they have secure, consistent relationships with responsive adults and opportunities for positive relationships with peers. These examples emphasize on Vygotsky's (1978) belief that stresses on the importance of social interaction to develop cognitive development. The home, is where informal learning first takes place.

Parents play a key role in fostering early learning opportunities for their children. The value of having strong parent and family involvement in early childhood education programs was supported by considerable research and study (Swick, 2004). Parents provide a wealth of information about a child, from birth to the present, from cognitive to physical to affective knowledge. Broffebrenners's (2005) ecological systems theory describes the four systems of human development wherein the family also referred to as the microsystem is closest to the child. Furthermore, the theory explains that all

decisions made in this system was highly influenced by the parents including choices concerning learning. The home environment initially provides various authentic experiences prior to formal schooling. As noted by, Ginsburg, Lee and Boyd (2008), children develop strong and deep knowledge of mathematics as part of their early development. Home experiences play a crucial role by providing rich and purposeful early math activities specifically in the development of whole numbers.

As children move to formal schooling, teachers form positive relationships with children to promote learning by providing a familiar environment where children feel safe (Ginsberg et al., 2008). Additionally, teachers initially used familiar teaching strategies recommended by the parents to further strengthen these relationships. Parents provide valuable information that assisted teachers in designing meaningful learning experiences in numeracy that will enhance learning (Clements and Sarama, 2007). The crucial task for educators is to connect that informal knowledge to the formal knowledge associated with schooling (Ginsberg et al., 2008). Le Fevre et al. (2009) further explained that broad exposure to a range of numeracy related activities at home may be one way to facilitate these connections.

The goal of the present research is to discover practices used by parents in teaching whole numbers, particularly rote counting from one to ten and the recognition of numbers one to ten. This study explores the context of parent's teaching practices at home to draw implications for teaching practices inside the classroom. Furthermore, the research also sought to discover the parent's practices in the appraisal



of rote counting from one to ten and the recognition of numbers one to ten.

1.1 Early Childhood Mathematics

The National Council of Teachers of Mathematics (NCTM) introduced the content standards for kindergarten students, it focused on five math areas specifically the following; number and operations, algebra, geometry, measurement and data analysis. The first standard, number and operation focused where children need to understand number, the act of counting, number words, one to one correspondence and cardinality (Bredenkamp, 2011). NCTM also outlined mathematical learning processes such as problem solving, reasoning, communicating, connections and representation that are employed to instruct children in mathematics development. Young children continually constructed mathematical ideas based on their experiences in their environment and their interactions with adults and other children, and their daily observations (Copley,2007). Children's understanding of mathematics must be supported by a rich environment and varied learning experiences in and out of school. The concept of numeracy as a life skill that needs to be connected to authentic activities is currently of considerable interest to educators of young children (National Mathematics Advisory Panel, 2008).

1.2 Appraisal of Early Mathematical Concepts

Studies such as those of Brenneman, Stevenson-Boyd, Barnett and Frede (2009) states that mathematical skills of young children are best assessed by early childhood professionals. Assessment of mathematical thinking was done through multiple sources of

information collected on a systematic basis and it is important to note that the purpose of early childhood assessment is to benefit children and identify their strengths and specific needs (Copley,2007). Examples of sources are checklists, rating scales, observations, learning logs, and rubrics. It is important to note that assessment is a term and a process used by professionals however, parents are generally not equipped with the process, the researcher uses the word appraisal instead. Parents appraised the mathematical skills of their children particularly rote counting and number recognition through informal processes.

II. METHODOLOGY

The data for this study were collected from 38 mothers and 12 fathers. The participant's children were on their first year in preschools with an age range of 3.6 to 4.5 years old. The participants that were chosen directly teach their children and they do not use tutors or any adult to facilitate learning. The parents completed a demographic questionnaire before the interviews. The interviews focused on the parents practices at home in relation to rote counting and number recognition. Questions regarding the appraisal of the said concepts were analyzed.

III. FINDINGS

Interviewing young parents whose children were presently in preschools shared information regarding various experiences they provided to foster readiness for learning early mathematical concepts such as rote counting and number recognition. The information gathered were similar amongst participants. Also, parents provided experiences that were



similar to those that they experienced as a young child.

Parents used games, household chores, different toys, and pencil and paper tasks to teach rote counting and number recognition. Parents further supported mathematical learning through singing songs, nursery rhymes and poems. They also used number cards and books that were deliberately purchased for recognizing numbers. Parents also used household chores as an opportunity to strengthen the concept of number. Simple chores such as packing away, setting the table, arranging the lunch box and school bags were examples of chores that parents viewed as helpful in teaching rote counting and number recognition.

The use of technology was evident in all the parents' practices. Parents purposefully purchased learning videos, video games, online games and the majority used the iPad to foster the learning of rote counting and number recognition. Also, parents used various math applications in their smart phones.

When appraising the ability of their children in rote counting and letter recognition, parents used the same materials when teaching the said concepts. Parents appraised rote counting by randomly asking their children to count numbers one to ten. Furthermore, parents asked their children to count numbers simultaneously with a video or a computer application. Parents also asked random counting tasks such as 'count the glasses on the table?' or 'How the cookies inside the jar?'

Number recognition was appraised through paper and pen tasks, flash cards, toys

or a computer application. Parents also shared that rote counting and number recognition is mastered when children answer questions without prodding.

The mathematical concepts that parents taught their young children were based on their personal beliefs that counting, number recognition, and identification of shapes were the most important mathematical skills children needed to learn as they enter preschool. The mathematical experiences the parents provided to their children were those that will achieve these beliefs. Interviews revealed that parents understood math concepts based on their prior knowledge and early experiences in math. The concepts that parents taught at home were the same concepts they learned as a child. Examples include rote counting, number recognition, shape recognition, writing numbers, and one to one correspondence. It is important to highlight that a number of mathematical concepts were neglected due to these beliefs and countless experiences were lost to enhance mathematical learning. Examples include measurement, patterns, relations, functions, estimation and probability.

Parents expect preschools to further expand the mathematical knowledge of their children by providing learning experiences in the different math standards. Parents also believed that counting, recognition of numbers and shapes was a good foundation for mathematics, and furthermore they believed that these skills are helpful upon entering preschool. Parents shared that they were challenged in teaching mathematical concepts such as measurement, probability, patterns, data analysis and geometry. Parents now



became the school's partner in providing new mathematical learning experiences at home.

IV. CONCLUSION

The study concluded that:

(1) To effectively plan for math instruction, understanding the prior knowledge of children and parents in rote counting and number recognition thru parent-teacher meetings are vital for effective teaching.

(2) Creation of a familiar learning environment with familiar mathematical learning experiences at the onset helps the teaching-learning process.

(3) Collaboration between parents and teachers are necessary in the assessment design of rote counting and number recognition.

(4) Ongoing parent math workshops are helpful to deepen the understanding of mathematics development in young children.

The math standards for young children are broad and deep and their experiences at home and in school will help them understand more concepts in math through purposeful experiences. Thus, parents understanding of math and math teaching must be nurtured through parent seminars or workshops in school. The strong relationship between home and school may be used to further the math understanding of parents to create purposeful learning at home. Parents, as the primary caregiver and the first informal teacher have the strongest influence to a child's learning.

Preschool teachers understanding of the various experiences parents provide at home, is helpful for instructional planning and likewise important in the creation of a safe, familiar and meaningful learning environment for the child. Parents are in the best position to provide experiences that will enhance mathematical skills through planned or unplanned activities in and out of the home.

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