Using Math-Themed Storybooks to Support Early Math Skills at Home: Mothers' Opinions

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Abstract

Math-themed storybooks can be used as a vehicle for mathematical support at an early age between parents and children at home. This allows different mathematical conversations between parents and children.There are two goals of the current study. These are the determination of mothers' opinions about:1) using math-themed storybooks to support early math skills, 2) early math skills. Participants are nine mothers who attained shared-book reading sessions with their children at home. Data were collected with interview forms. Mothers reportedly did not read any math-themed story books, mostly. Most of mothers stated that children must learn rhythmic counting and recognizing numbers at pre-school period. And mothers and childrens play mathematical toys, count numbers by memorizing and talk about mathematics in daily life. All of the mothers thought that math-themed storybooks have lots of contributions on math skills and must use to teach math.

Introduction

· Doing math activities such as cooking, playing board games and card games, singing songs and rhymes at home, has an impact on children's math skills (Blevins-Knabe, & Musun-Miller, 1996;Cross, Woods, & Schweingruber, 2009).

· In recent years, there are many studies showing that reading math storybooks among parents and children contributes to the development of children's early math skills (Hassinger-Das, Jordan, & Dyson,2015; Green, Gallagher & Hart, 2017; Hendrix, Hojnoski, & Missall, 2019; Akinci-Cosgun, Stites, & Sonnenschein,2020)

· Development and Research in Early Mathematics Education (DREME), can be used to notice and talk about (1) the number of objects, (2) patterns that repeat and grow, and (3) examples of shapes, and their properties.

· Children's storybooks provide a context through which patterns, problem solving, estimation and probability, and real-world contexts may be explored (Moyer, 2000; Kribs & Ruebel, 2008; Yilmaz Genç, Akıncı Cosgun, & Pala,2017). The U.S. National Council of Teachers of Mathematics (NCTM) has long posited the use of storybooks as a way of introducing mathematical concepts to children (Casey, Kersh, & Mercer-Young,2004).

. Reading math-themed storybooks between mothers and children is important for promoting children's early math skills. Thus, we examined the opinions of mothers about using math-themed story books for supporting children's early math skills.

Methods

Sample: The sample of the study consisted of nine mother-child dyads living in the central district of Aksaray. Demographic information regarding mothers is as follows;

Table 1. Demographic Information

		Frequency (f)
Average Age of Parent (Years)	30-35	5
	35-40	4
Child age	3	3
	5	
SEL	Upper	3
	Middle	3
	Lower	3
High School Diploma/GED or less	Pre-Primary School	1
	Primary School	3
	High School	3
	University	2
Mother Profession	Housewife	6
	Servant	2
	Teacher	1

Measures and Procedures:

These data come from a larger study. For this poster, mothers completed a demographic questionnaire and participated in a semi-structured interview about using math-themed storybooks to support early math skills at home.

Results

Data Analysis

• The data were analysed through a content analysis method. The data regarding the views of the mothers were given as frequency values.

Table 2. Average spending time together (mother and child)

Average Number of Times Mother and Child	**Frequency (f)**

30 min.-60 min.	1
1 h.-2 h.	3
2 h. -3 h.	1
3 h.-4 h.	1
4 h.-5 h.	1

Table 3.The frequency of reading math-themed story books

	Frequency (f)
Yes	1
No	8

According to Table 3, in general, one of mothers stated that she always read math-themed story books to her child but eight of mothers don't read any math-themed story books before. Some of their opinions are below:

"I haven't read a math-themed storybook before. Generally, I have do activity books "

"No, we haven't read it before. We do the things given by the teacher such as the activity book or homework"

Table 4. The frequency of math skills stated by mothers

Math skills	**Frequency (f)**
Rhythmic counting / recognizing numbers	8
Operation (Simple addition-subtraction)	5
Geometric shapes	4
Colours	1
Multiplication table	1

Table 4 shows that most of mothers (f=8) stated that children must learn rhythmic counting and recognizing numbers at pre-school period. Five of mothers said that simple addition and subtraction procedures and four of mothers thought that geometric shapes must be learnt by children. Interestingly, one of mother thought colours as a mathematical concept and skill. And also, one of the mothers stated that the multiplication table is a mathematical skill.

Table 5. The frequency of mathematical activities to improve math skills

Activities	Frequency (f)
Playing with math-related toys (for example, beans, number bars, pattern blocks).	3

Count numbers by memorising	3
Playing puzzles / legos / blockes and tangrams	3
Talking about mathematics in daily life. (For example talking shapes and counting the numbers of cones)	3
Teaching numbers	2
Addicting numbers	2
Matematiği öğreten video/tablet/bilgisayar oyunu oynama Playing computer games and watching videos that teaches mathematics	2
Playing with math-related board games or card games	2
Reading stories	1
Talking about money-price-tag at shopping and making a money account	1
Telling the floor in the elevator	1
Talking about number of people while preparing the dinner table	1
Reading books about geometric shapes	1

According to Table 5, mothers said that they play mathematical toys, count numbers by memorizing and talk about mathematics in daily life.

Tablo 6. The frequency of mothers' opinions about contribution of math-themed storybooks on math skills.

Answers	**Frequency (f)**	**Sample answers**
Yes	9	• *"Yes, there were counting numbers in the book. 3 holes and 4 radishes were like that. My daughter counted it to herself as well. For example, here I counted the cookies. As I said, we do the counting during the day. We talk about how many are left here. Generally we talked about counting. For example how many radishes are left?"the* • *"Well I don't know exactly.. My daughter in which section did you learn the numbers? You know, until 123 6 or up to 7… Give me a scene,please? Show me if you want – while counting the rice cakes..My daughter give me an example,please? While counting cabbage or carrot counting…"* • *"We talked about one of the ducks missing. My son counted the ducks. How many apples are on the tree? How many baby goats were there? I asked. We counted cabbages, carrots, goats.."* • *"We talked about the numbers of cookies. For example, I asked How many cookies did the frog eat? How many cake baits?*

How many were the baby goats? How many goats were there?.."

No	0

Table 6 shows that all mothers thought that math-themed storybooks have lots of contributions on math skills and must be used to teach math.

Results

Mothers reportedly did not read any math-themed story books before, mostly. Mothers said that they play mathematical toys, count numbers by memorizing and talk about mathematics in daily life. All of the mothers thought that math-themed storybooks have lots of contributions on math skills and must be used to teach math.

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