

Introduction

- The percentage of homes with tablets of families with children under age 8 has increased from 8% in 2011 to 78% in 2017 (Zippert, et al.).
- E-books for literacy have been shown to be beneficial for young children, but less is known about math-focused e-books.
- Parent-child interaction about math story problems, even just once a week, showed improved math achievement in the child by the end of the school year. The benefits of occasional math-related interactions are especially apparent for children whose parents are anxious about math. Providing a math app that allows math-anxious parents to more easily engage in math with their children may help close the gap between parents' high math anxiety and children's low math achievement (Berkowitz, et al.).

Method

Participants

- Preschool children and their parents

Materials

- Tablet
- Math E-book app created in collaboration with Mary Fuhs, PhD. and Tam Nguyen, PhD. and his team
- Survey which includes questions adapted from Dr. Tapia's Attitudes toward mathematics inventory as well as Barbara Plake and Claire Parker's revised Mathematics Anxiety Rating Scale and basic demographic information



STORYLINE SCRIPT

Part 1 (before trials begin):

As the kids arrived at school one sunny Friday morning, their teacher called for their attention. "Class! Class! As you know, we have our field trip to the zoo today. All week we've been talking about the different types of animals at the zoo. Can anyone tell me an animal we learned about this week?"

Lily raised her hand and Ms. Wilson called on her. "Yes, Lily? What animal do you remember?"

Lily shouted "Elephants!"

"Very good! "Does anyone else remember an animal we learned about this week?"

Andre raised his hand and said, "Monkeys!"

"Nice job, Andre!" said Ms. Wilson, "Alright, it's time to get on the bus!"

The class loaded the buses and drove to the zoo.

But, when the children arrived at the zoo, a worried zookeeper rushed over to the class and said, "We have a problem, and we need your help! Many of our animals snuck out of their cages last night! We don't know where they are hiding. Can you help us find them?"

The class yelled, "Yes!"

NO STORYLINE SCRIPT

Part 1 (before trials begin):

We're going to look at the book with animals. Do you like animals?

What kind of animals can you think of?

When we look at this book, we are going to count some animals and see how many each child finds.

Purpose

- The purpose of this pilot study is to examine parents and children's perceptions of our adaptive number e-book.
 - Do children respond more accurately to questions in the e-book when presented with a narrative or storyline embedded version of the e-book?
 - Do parents with high math anxiety report interest in adaptive number e-books with or without a clear narrative or storyline?

Procedure

- Direct child interaction:
 - Preschool participants will be randomly assigned to either the no storyline or the storyline E-book groups. Both versions will be read off a tablet by an experimenter and will take approximately 20 minutes
 - No storyline condition: the E-book will prompt the experimenter to ask the child questions. The child will answer by interacting with the tablet. An example question asked in the no storyline condition is "which child is looking at more animals?"
 - Storyline condition: A narrative about children going to the zoo will be introduced and what they discover will precede the same questions displayed in the no storyline book.
 - Both versions of the E-book are adaptive and will have up to 4 levels of difficulty that will be introduced when a child answers 4 of 5 questions on a prior level correctly.
- Parent survey:
 - Parents/guardians will be emailed an online survey that includes questions about their feelings about math, basic demographic information, and preferences about storyline versus no storyline number books.

References

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