

Engaging Families in Early Math: A Closer Look at the California Statewide Early Math Initiative

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Introduction

Importance of Engaging Families in Early Math

Engaging children in math at home through daily activities and interactions helps predict not only how well children will do in school^[1,2] but also whether they will pursue a future career in STEM.^[3] Despite this, many families shy away from engaging in math activities with their children. This may be because parents have negative feelings towards math^[4], or because they need more support in understanding how children develop important math skills and concepts.^[5]

California Statewide Early Math Initiative (CAEMI)

The CAEMI's mission is to improve math and science outcomes for children ages 0-8 across California. One of the CAEMI's main goals is to raise family awareness and increase their knowledge of how to support children's early math learning. To this end, a variety of family resources and activities were developed by the initiative and piloted at the Lighthouse for Children Child Development Center, the demonstration site for this initiative. The activities and resources were designed to promote a play-based approach to math, positive math identity and mindset, and share ways math can be integrated into children's daily activities and routines.

The activities and resources included:

- Literacy Activities:** a collection of book reviews based on children's books with early math content. Each book review also contains one or more math activities.
- Family Math Night:** an evening at the Lighthouse organized for families to participate in math activities and learn about the importance of engaging in math at home.
- M.A.T.H. Packs:** backpacks that provided families with a children's book, the associated book review and math materials to engage children in math activities at home.
- Distance Learning Program:** in response to the pandemic, Lighthouse staff conducted twice weekly Zoom sessions for children in their classrooms, in which they engaged in math activities.
- Interactive Math Exhibits:** hands-on math activities set up in the Lighthouse entryway for parents to engage in with children at drop-off or pick-up time.

In this poster, we will discuss in greater detail the **Literacy Activities**, **Family Math Night** and **M.A.T.H Packs**.

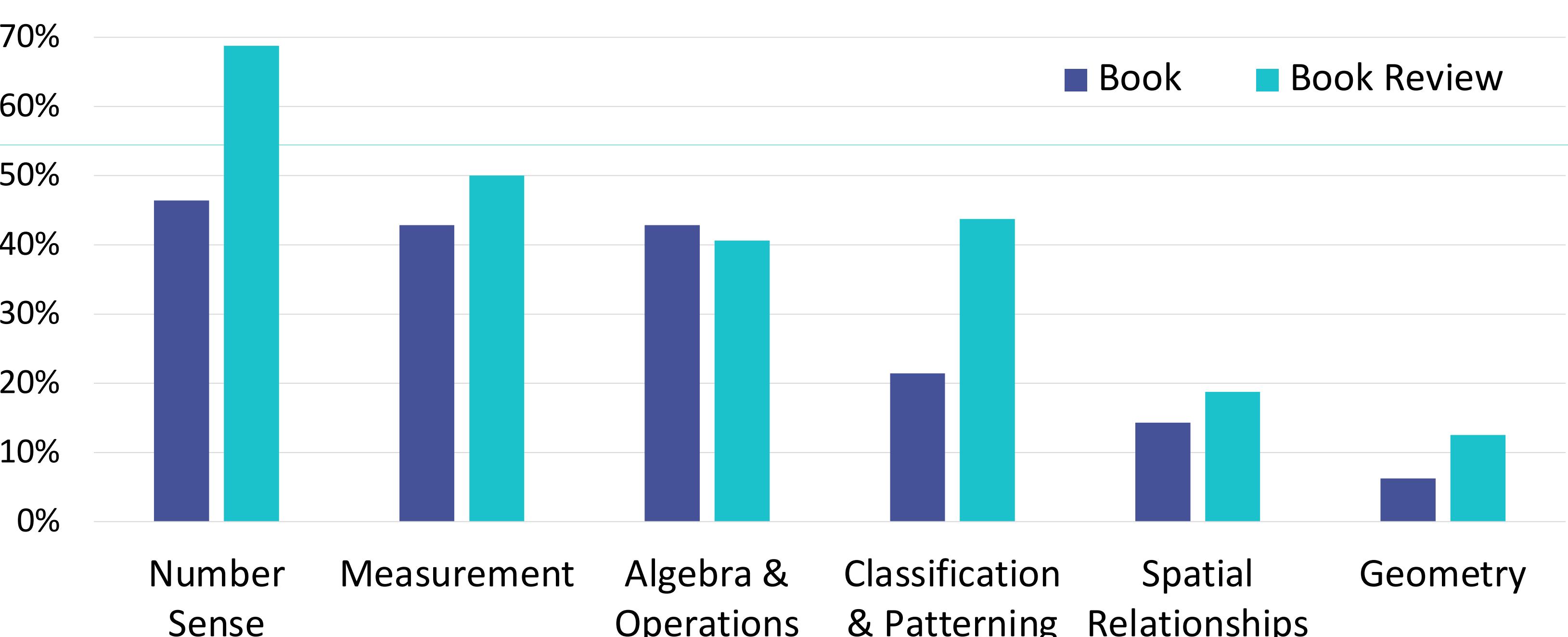
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Literacy Activities to Build Math Concepts

Fifty-seven children's books with early math content are featured in a collection of book reviews with prompts for families and educators on how to read the book to promote early math understanding. Each book review contains questions for families to discuss while reading the book as well as one or more activities to engage children in math through play in ways that relate to the content in the book. The book reviews can be found here: <https://www.earlymathca.org>.

A subset of the book reviews (and associated books) were examined for clarity, age appropriateness, and the math areas represented. The evaluation found that the book reviews (and associated books) promoted a growth mindset, positive math identity, and presented math in everyday situations. The graph below shows the percentage of children's books and book reviews that touched on each of 6 math areas. While most materials focused on number sense, the book reviews helped introduce math areas not otherwise covered by the book.



These book reviews and activities were then used as part of the **M.A.T.H. Packs** and **Family Math Night**.

M.A.T.H. Packs at Home

Families took home Math Activities Take Home (M.A.T.H.) Packs that included materials and ideas on how to engage children in math activities at home. Each M.A.T.H. Pack contained a children's book, associated book review, and materials to guide at-home early math experiences.

In a survey about the M.A.T.H. packs, on a scale 1-10:

- 82% of parents rated their enjoyment of the M.A.T.H. packs as 8/10 or higher.
- 65% of parents rated the helpfulness of the M.A.T.H. packs in supporting children's math as 8/10 or higher.



Family Math Night

Family Math Night offered 38 families strategies for engaging children in math at home. The opening session shared tips on how to engage children in math thinking during reading time. Families then participated in several early math activity stations based on activities from the book reviews.

Key Components of Family Math Night:

- Literacy was an entry point for engaging families in math.
- Activities were designed for children ages birth to eight.
- Activities were hands-on and engaged children and families.
- Lighthouse staff provided support to families.
- The evening included both information for families (tips) and an invitation to practice some of the reading strategies to promote mathematical reasoning.

Key Findings from the Evaluation (parents surveys and observations):

- 94% of parents felt that Family Math Night built their confidence and taught them how to talk about math with their children during everyday activities.
- The level of support from educators varied by station. Some educators actively participated in the activities with children, while others let parents take the lead, only stepping in if questions arose. Parents were less actively engaged in their children's learning at stations where educators led the activity. This suggests that the role of educators influenced how comfortable parents felt engaging in the activities with their children.



Conclusion

The initiative provided a range of ways to engage families in children's early math learning in and out of school. The evaluation indicates that, as a result of participating, families felt more confident in supporting children's math and that they had a better understanding of how to support their children's math learning at home.

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