Improving Math Literacy: An Evaluation of Take-Home Math Bags in Pre-K

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INTRODUCTION

Foundational Math Skills:
- Counting
- Patterns & Algebra
- Measurement & Data
- Spatial Relations

(Turrou, 2021)

Pre-K Students often struggle with:
- One-to-One Correspondence
- Cardinality
- Ordinality

(Jacob, 2022)

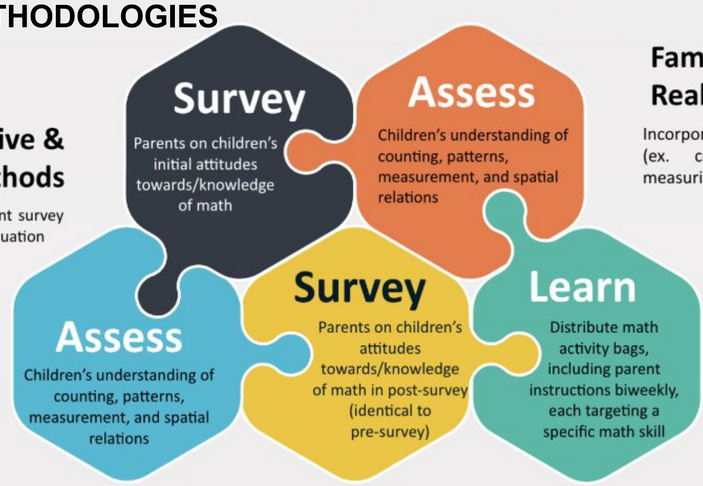
Early Math Skills as a Predictor
Early math skills are proven to be a stronger predictor of children's later achievement than early literacy skills

Absence of Math Instruction
Only around 2.5% of the typical preschool day is dedicated to math instruction

Lack of Real-World Application
Grocery stores, household chores, and play are ideal opportunities for foundational math skill development

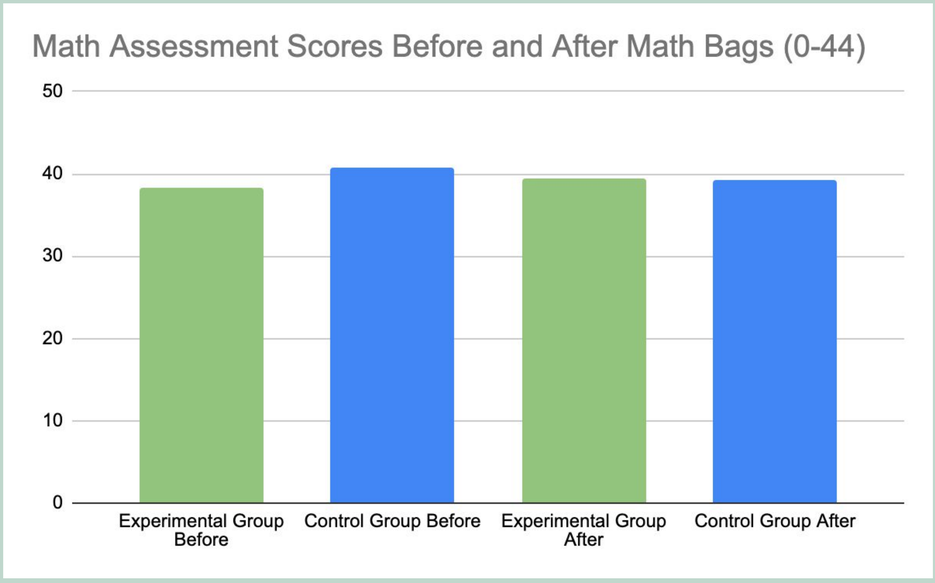
RESEARCH METHODOLOGIES

Quantitative & Qualitative Methods
Gathering data from both a parent survey and a student comprehension evaluation



Family Engagement & Real-World Relevance
Incorporating real-world activity ideas (ex. counting at grocery store, measuring household objects)

DATA AND FINDINGS



Assessment Scores
- Experimental Group Average Before Bags: **38.3/44**
- Control Group Average Before Bags: **40.7/44**
- Experimental Group Average After Bags: **39.4/44**
- Control Group Average After Bags: **39.3/44**

Parent Survey Reported Data
- 80% of used the math bag materials and activities more than once per week
- 80% of parents reported their child's "positive" or "somewhat positive" attitude towards the math bags
- 55% of students engaged with math activities more frequently than before the math bags, 40% did at the same frequency, and 5% did less frequently

IMPLICATIONS AND NEXT STEPS

- To cater more specifically to the students' areas for growth, holes in understanding demonstrated from the pre-assessments can be utilized to create more informed, targeted activities for the math bags, increasing comprehension in necessary areas.
- Implementing activities into class time will provide guidance for children to follow these activities and build upon them in their everyday lives and with their families.
  - This strategy will also combat the possible regression of math comprehension, visible in the control group test scores, that may result from a lack of regular practice with math activities.

CONCLUSIONS AND ANALYSIS

- Weekly opportunities to engage with math activities through math bags (experimental group) was positively correlated with math assessment scores.
- Control group (no math bags) had a slight decrease in math assessment scores
  - May be due to a lack of practice with math concepts, or inconsistencies in conducting assessments (causation cannot be determined from this data)
- Take-home math bags lead to an increase in math engagement and increase in reported attitude for the majority of participating students in the experimental group
  - Report of less frequent engagement with math from one participant could be due to the child's time availability during these specific weeks

ACKNOWLEDGEMENTS / REFERENCES

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Works Cited:

Jacob, R., & Jacob, B. A. (2022, March 9). *New evidence on the benefits of small group math instruction for young children*. Brookings.

Turrou, A. C., Johnson, N. C., & Franke, M. L. (2021). *The Young Child & Mathematics* (3rd ed.). National Association for the Education of Young Children.