Achievement Effects of Four Early Elementary School Math Curricula:
Findings from First Graders in 39 Schools

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Roberto Agodini

Mathematica Policy Research, Inc.

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Policy Research, Inc.

The Study's Research Questions

- What are the relative effects of different early elementary school math curricula on student math achievement in disadvanted schools?

- Do the relative effects vary for students in different instructional settings?

Study Design

- Used a competitive process to select 4 curricula with different approaches to teaching math
- Recruited 110 schools in 12 districts that can detect an effect size as small as 0.15
- Set up a school-level randomized controlled trial in each participating district

The Curricula

- Investigations in Number, Data, and Space
- Math Expressions
- Saxon Math
- Scott Foresman-Addison Wesley Mathematics

First Cohort: 39 schools in 4 districts

- Dispersed across four states, in three regions of the country, and in different urbanicities
- The four curriculum groups are similar at baseline (both sample sizes & characteristics)
- Curricula were implemented in the 1st grade during the 2006-07 school year

Evaluation Data

- **Student data**
  - ECLS-K math test administered in the fall and spring
  - demographics from school records
- **Teacher data**
  - math test administered before training began
  - fall and spring surveys
- **School data from public-use files**

Response Rates

Type of Data	Response Rate
Student Data	Pre-test – 96% Post-test – 90% Demographics – 97%
Teacher Data	Fall Survey – 97% Spring Survey – 88% Assessment – 96%
School Data	Public Use Data – 100%

Summary of Implementation Findings

- All teachers attended initial training and nearly all (96%) attended follow-up training
- Total training varied by curriculum, ranging from an average of 1.4 to 3.9 days
- Nearly all teachers reported using their assigned curriculum as their core, and about a third reported supplementing

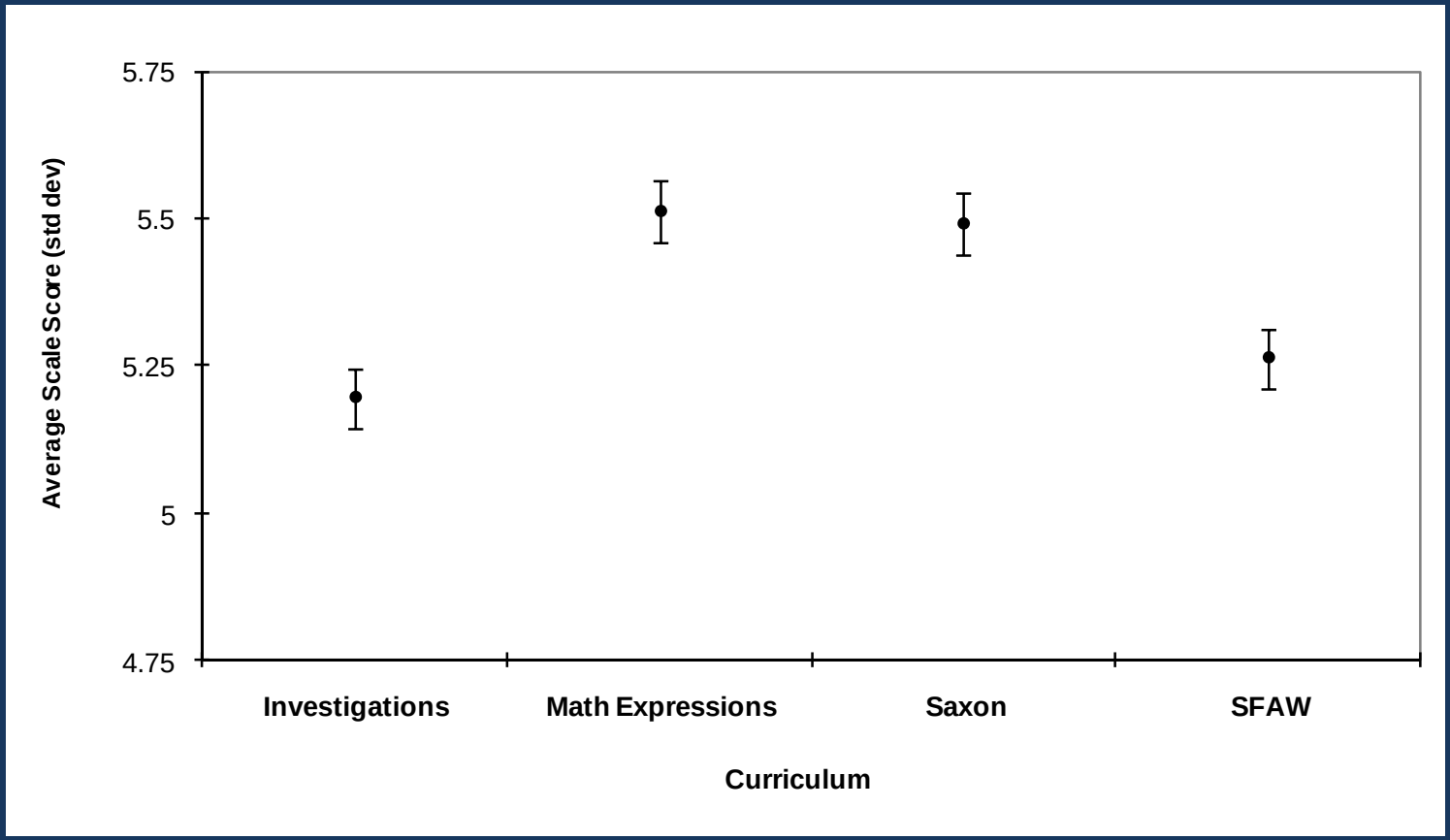
Implementation Findings (continued)

- 88% of teachers reported completing at least 80% of their assigned curriculum
- On average, Saxon teachers reported spending one more hour on math instruction per week than the other three curricula
- Teachers reported implementing a majority of the curriculum features in the recommended way

HLM techniques used to estimate effects

- 3 level model with:
  - 7 student characteristics (including fall achievement)
  - 8 teacher/classroom characteristics
  - 3 school characteristics (including assigned curriculum)
- Only results that are statistically significant at the 5 percent level of confidence are discussed

HLM results


5.75
5.5
5.25
5
4.75
Average Scale Score (std dev)
Investigations
Math Expressions
Saxon
SFAW
Curriculum

Results indicate that

- For a student at the 50th percentile, the student's rank would be 9 to 12 points higher if the school used Math Expressions or Saxon, instead of Investigations or SFAW

Also examined results for 15 subgroups

- Each of the 4 participating districts
- School Characteristics
  - Fall math achievement (3 groups)
  - Free/reduced-price meals eligibility (2 groups)
- Teacher Characteristics
  - Education (2 groups)
  - Experience (2 groups)
  - Math content/pedagogical knowledge (2 groups)

Subgroup Findings

- 8 of the 15 subgroup analyses found statistically significant differences in student math achievement between the curricula.

- Main finding: All of the significant differences favored Math Expressions or Saxon over Investigations or SFAW

Conclusions

- These results show that what the study schools used mattered
- This is another example that shows randomized-controlled trials can be conducted in educational settings

Next Steps

- Two additional reports are planned
  - Next report will present results for all 110 study schools, for both 1st and 2nd grades
  - The last report will present results for the subset of schools with 3rd grade implementation
- Future reports also will include classroom observation data

For More Information

www.MathCurriculaStudy.com