

First in Math Findings Brief – Conducted by SRI

2016 - 2017 4th Grade First in Math Evaluation Using PSSA Test Scores

Sean Gardiner

Upper Merion Area School District

11/27/2017

Summary of Results

First in Math is moving the needle on student academic achievement.

Research Question

Did First in Math increase student academic achievement among 4th grade students who used First in Math in the 4th and 5th quintile (used First in Math for 613 minutes - 12,488 minutes) compared to 4th grade students who used First in Math in the 1st and 2nd quintile (used First in Math for 20 minutes - 332 minutes)?

For this evaluation, we would feel comfortable answering yes to our research question if, based on our data, there was a greater than 90% probability that First in Math increased student academic achievement by at least 50 test score points as measured by 4th Grade Math PSSA test.

Findings

TABLE 1. THE EFFECT OF FIRST IN MATH ON STUDENT ACADEMIC ACHIEVEMENT BASED ON THIS EVALUATION'S DATA.

Grade	Meeting your goal?	Probability that First in Math increased student academic achievement by 50 test score points or more	Estimated size of increase	Comparison group average	Number of students in treatment group	Number of students in comparison group
4	Yes	91%	73	1010	52	52

90% Thresholds

Table 1 shows the effect of First in Math on student academic achievement based on this evaluation's data. It indicates the probability that First in Math increased student academic achievement by at least 50 test score points as measured by 4th Grade Math PSSA test, the estimated size of the increase, the average outcome for students in the comparison group (4th grade students who used First in Math in the 1st and 2nd quintile (used First in Math for 20 minutes - 332 minutes)), and the sample sizes for the treatment and comparison groups.

The sample sizes in Table 1 represent the number of students in each group. However, the intervention was implemented at the group (e.g. classroom or school) level.

Cautions

- These findings apply only to students who were included in the final evaluation sample. This means you should use caution when using these results to make decisions for students who do not have the same characteristics as those included in the evaluation. Table A.1 in the appendix shows the number of students in each group before and after matching.

About the Evaluation

What is being evaluated

This evaluation tested the effectiveness of First in Math. First in Math is an online program intended to increase math fact fluency

The Basics of First in Math

Program Type	Practice
Key Components	Multiple opportunities to increase math fact fluency through games and activities
Developer Implementation Guidelines	the developer recommends 20 minutes per week
Target Outcomes	Mathematics
Costs	██████████

Evaluation approach

- This study used a matched comparison design. This is a quasi-experimental design. To compare apples to apples, students using First in Math were compared to other students with similar characteristics.
- Baseline equivalence (or similarity between treatment and comparison groups before First in Math was introduced) was tested in the matching tool using:
 - FEMALE
 - SPEC_ED
 - GIFTED
 - x504
 - WHITE
 - ASIAN
 - BLACK
 - HISPANIC
 - PSSA_Gr3_MATH
- The analysis controlled for:
 - FEMALE
 - SPEC_ED
 - GIFTED
 - x504
 - WHITE
 - ASIAN
 - BLACK
 - HISPANIC
- Summary statistics from the program evaluation sample are shown in Table A.2 in the appendix.

First in Math Implementation

Setting	Used in 4th grade general classrooms
Delivery Method	individually
Evaluation Period	5 months and 3 weeks
Treatment Group Usage	First in Math was used for 613 minutes or more between October and March
Implementation Considerations	No

Outcomes

- Student academic achievement was measured using 4th Grade Math PSSA test.
- In the dataset used for analysis, the 4th Grade Math PSSA test results for treatment and comparison group students ranged from a minimum of 845 to a maximum of 1407.
- Table A.2 in the appendix shows differences in baseline characteristics between the treatment and comparison groups without statistical adjustments.

Context for the Intervention

This evaluation studied First in Math's impact on 4th grade students.

School/District Characteristics

School Type	Public
District Size	4000
Setting	Suburban
Location	PA

Overall Student Population

Non-white	30%
Hispanic	10%
Female	50%
English Learners	10%
Students with IEPs	8%

Conclusion

Next Steps

continue to purchase First in Math