

## Third through Fifth Grade Missouri Students Using *Experience Math* Outperform Matched Controls on the Math Section of the Missouri Assessment Program (MAP)

### Key Finding

- Students using *Experience Math* significantly outperformed their matched peers in math achievement.
- The model-predicted math achievement for students who used *Experience Math* is 4.9 points greater than the matched control students who used another core math program.

### Introduction

*Experience Math*, a student-centered, K-8 curriculum, celebrates the art of teaching combined with the power of an engaged classroom. Through simple planning and high-value, in-the-moment professional development, *Experience Math* allows teachers to do what matters most: create community, strengthen learning, establish understanding, and gather evidence of learning.

The *Experience Math* program was developed by Dr. Marian Small, an internationally renowned mathematics educator, author, and professional learning consultant. Marian Small has embedded her instructional insights, including mathematical contexts, differentiation strategies, and implementation tips.

Do third through fifth grade students in Missouri schools using *Experience Math* perform better on a test of math achievement compared to those using another math program? This research question was tested with a Quasi-Experimental Design (QED) study that compared recent Missouri Assessment Program (MAP) scores of students using *Experience Math* to closely matched control students that used another core math program.

### Methods

This QED was designed to address whether third through fifth grade students' math achievement differs between users and nonusers of *Experience Math*, after accounting for baseline differences between the two groups. Math achievement after a year of use of the program was measured with Missouri Assessment Program (MAP) math scores for grades 3-5 from Spring 2025 and baseline achievement was measured with a Renaissance Star math assessment from Fall 2024. In this study, students using *Experience Math* during the study period were matched to students not using the program using propensity score matching. The propensity score matching was conducted after the outcome data was collected, making the study retrospective.

## Procedure

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We collected student-level math test performance and demographic data for third through fifth graders from a large school district from the 2024–2025 school year.

Next, a comparison and treatment group were identified. *Experience Math* students were matched to students who did not use *Experience Math* based on Fall 2024 Star math score within each grade using propensity scoring methods and nearest neighbor algorithms. As stated previously, the matching was performed after the outcome data was collected (in Fall 2025), making the study retrospective.

## Sample

The sample consisted of 327 treatment students and 327 matched control students. As a result of the matching, baseline equivalence in terms of math achievement as measured with the Fall 2024 Star math assessment was achieved ( $t(652)=0.002$ ,  $p=.99$ ; Hedge's  $g=0.0002$ ). Table 1 shows the characteristics of the matched sample.

**Table 1. Characteristics of the analytic sample**

	<b>Experience Math</b>	<b>Control</b>	<b>Total</b>
Number of Students	327	327	654
Percent Females	50.5%	46.5%	48.5%
Percent Males	49.5%	53.5%	51.5%
Percent African American	4.3%	6.1%	5.2%
Percent Hispanic	4.3%	4.6%	4.4%
Percent Caucasian	79.8%	77.4%	78.6%
Percent Multiracial	4.6%	4.6%	4.6%
Percent Other Ethnicities	7.0%	7.3%	7.2%
Percent Economic Disadvantage	12.2%	14.1%	13.1%
Percent English Language Learners	4.0%	4.6%	4.3%
Percent Special Education	14.7%	14.1%	14.4%

## Measures

Students' Fall 2024 and Winter 2025 math knowledge was measured with the Renaissance Star math assessment, which measures students' mathematics achievement across key domains such as numbers, algebra, geometry, and data analysis. It adjusts question difficulty based on responses and measures. Scores are reported using the unified score, which have the measurement properties of a Rasch score scale.

Students' Spring 2025 math knowledge was measured with the math section of the Missouri Assessment Program (MAP) Assessment, which is aligned to the Missouri Learning Standards at each tested grade and subject. It is administered at the end of the school year. Students' correct responses are used to compute a scale score that represents overall math achievement.

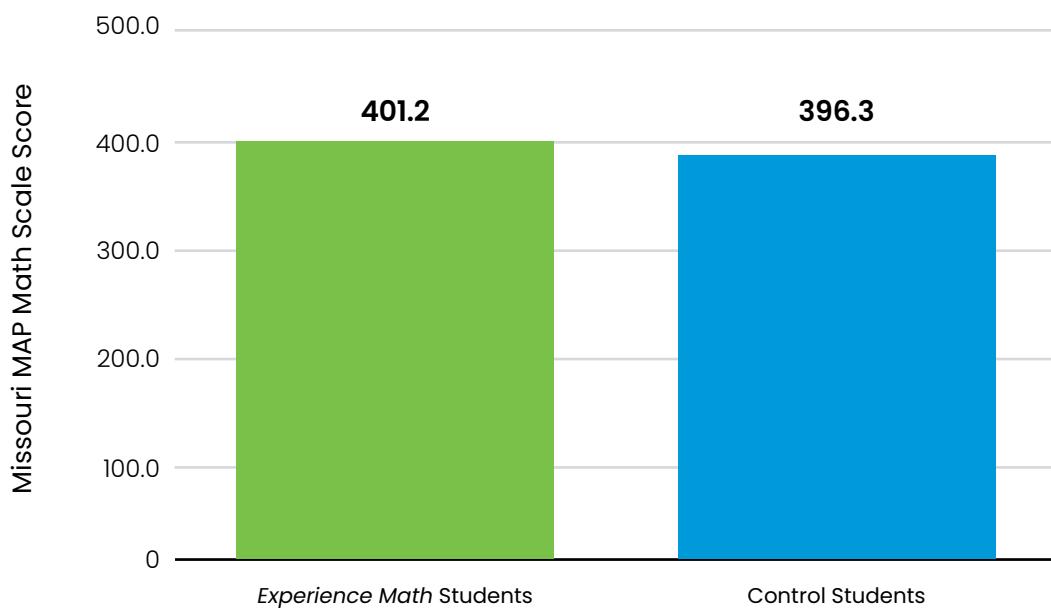
## Results

The relationship between *Experience Math* use and students' math achievement was tested with a linear model controlling for relevant demographic characteristics including students' special education and free, reduced lunch status, and their winter Star math scores.

The results showed that the math achievement of students who used *Experience Math* was significantly greater than the matched control students ( $b=4.9$ ,  $\beta=0.1$ ,  $t(649) = 2.9$ ,  $p<.05$ ). ( $b$  is the unstandardized coefficient;  $\beta$  is the standardized coefficient.)

Figure 1 shows the model-predicted math achievement for students who used *Experience Math* is 4.9 points greater than the matched control students who used another core math program.

**Figure 1. Predicted Math MAP score for *Experience Math* and Matched Control Students**



## Conclusion

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The efficacy of educational programs should be tested in real-world settings to help inform practical decision making in educational contexts. The current study used a QED design to test the effectiveness of *Experience Math* for students in Missouri, compared to those using another core math program.

In addition to rigorous matching techniques, the analytic approach controls for important demographic variables. This helps ensure that the observed effects are most likely attributable to the *Experience Math* program rather than to extraneous factors. The current study provides robust evidence that *Experience Math* is highly effective for Missouri students in schools serving kindergarten through fifth grade. The matching methodology, matching results, sample size, analytic approach, and findings of this study meet the ESSA requirements for Level 2 evidence (Moderate Evidence).

It is important to note that there are several limitations to this study. First, all schools generally teach similar concepts aligned to state curricula. In addition, this study did not consider variability in the implementation and fidelity of the program. These factors make it harder to describe the true effect of an educational program. Despite these limitations, this study provides valuable evidence that math scores of students using *Experience Math* were higher than control students'. This evidence underscores the effectiveness of the *Experience Math* program.

The results of the current study show that *Experience Math* students had predicted 4.9 points greater than control students. In summary, the program's positive impact on math achievement suggests that *Experience Math* is a valuable tool for helping students learn math skills in Missouri schools.

## References

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US Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.