

Registry of Efficacy and Effectiveness Studies

Study Title:

Efficacy of Zearn Math

Registry ID: 17280.1v1

Version History

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Section I: General Study Information

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Other Registration Name:

-

Other Registration Date:

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Other Registration Number:

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Study Start Date:

2022-05-16

Study End Date:

2025-09-30

Intervention Start Date:

2022-06-22

Timing of entry:

Prior to collection of outcome data

Brief Abstract:

Zearn Math is the sixth most popular elementary school mathematics curriculum in the U.S., with 12 percent of teachers reporting they use it regularly. Zearn Math has shown promise for improving student mathematics achievement, but its efficacy has not yet been established through rigorous, well-powered evaluation. Researchers at the non-profit RAND Corporation are implementing this efficacy evaluation of Zearn Math for improving student mathematics outcomes in grades 3-5. The study employs a randomized controlled trial, complemented by studies of implementation and cost. RAND is conducting this evaluation independently of Zearn, the non-profit organization that developed and disseminates Zearn Math.

Keywords:

mathematics education, education technology, elementary math, randomized controlled trial

Comments:

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Section II starts on the next page.

Section II: Description of Study

Type of Intervention:

Curriculum/Product

Topic Area of Intervention:

Education Technology, Mathematics and Science Education

Number of intervention arms:

1

Target school level:

3, 4, 5

Target school type:

Urban

Location of Implementation:

United States: United States : South

Further description of location:

Texas

Brief Description of Intervention Condition:

Intervention schools implement Zearn Math as a digital supplement to the district mathematics curriculum.

Brief Description of Comparison Condition:

Comparison schools continue to implement the district mathematics curriculum without Zearn Math.

Comparison condition:

Business-as-usual

Comments:

-

Section III: Research Questions

Confirmatory research questions:

Question 1:

What is Zearn Math's cumulative effect over two academic years on upper elementary students' mathematics achievement as measured by the Texas STAAR assessment, relative to business as usual without Zearn Math?

Question 2:

What is this cumulative two-year achievement effect (defined in RQ 1) for the subgroup of students who score below grade-level proficiency at baseline?

Exploratory research questions:

No Questions added yet.

Comments:

-

Section IV-A: Study Design (Selection)**Study Design:**

Randomized Trial (RT)

Comments:

-

Section IV-B: Study Design (Input)*Study Design: Input***Unit of random assignment of intervention:**

School

Assignment within sites or blocks:

Yes

Define the sites or blocks:

school percentages of students who are: economically disadvantaged; English learners; in "meets grade level" or above STAAR performance category

Probability of assignment to treatment the same across sites or blocks:

Yes

Probability of assignment to treatment:

0.50

Unit outcome data measured:

Student

Intermediate clusters between unit of random assignment and unit of measurement:

Yes

Description of intermediate clusters:

class

Comments:

-

*Design Classification***Based on the responses above, this study has been classified as:**

RT: Multisite (Blocked) Cluster Randomized Trial

Section V: Sample Characteristics

Approximate number of students per intermediate cluster (class): 31

Approximate number of intermediate clusters (class) per school: 5

Approximate number of schools in the comparison condition within each block (school percentages of students who are: economically disadvantaged; English learners; in "meets grade level" or above STAAR performance category): 6

Approximate number of schools in the intervention condition within each block (school percentages of students who are: economically disadvantaged; English learners; in "meets grade level" or above STAAR performance category): 6

Number of blocks (school percentages of students who are: economically disadvantaged; English learners; in "meets grade level" or above STAAR performance category): 5

No Yes - Students with the most significant cognitive disabilities who are eligible to take the STAAR Alternate 2 assessment instead of the standard STAAR assessment (approximately 2% of students in the study schools). No No

No Yes - The district offered 128 schools as candidates to be in the study, excluding some low-performing schools for which they wanted full control over curriculum materials. We used random selection to pick 64 of the 128 to be in the study, stratifying on school percentages of students who are: economically disadvantaged, English learners.

No No

Comments:

Sample counts are calculated for students in grades 3 and 4 during the 2022-23 academic year, who will then be in grades 4 and 5 during the 2023-24 academic year if promoted on schedule. These students comprise the focal sample. Students in grade 5 during 2022-23 are not part of the focal sample because if promoted on schedule they would not be in the study schools and grades for both years of the study and thus could not contribute to the estimation of cumulative two-year effects specified in the confirmatory research questions.

Section VI: Outcomes (Input)

Confirmatory question 1: Outcome Measure 1

Outcome domain: Student Achievement - Mathematics

Minimum detectable effect size: 0.174

Outcome measure: Texas STAAR

Scale of outcome measure: Continuous

Normed or state test: Yes

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 2: Outcome Measure 1

Outcome domain: Student Achievement - Mathematics

Minimum detectable effect size: 0.179

Outcome measure: Texas STAAR

Scale of outcome measure: Continuous

Normed or state test: Yes

Same outcome measure in treatment and comparison groups: Yes

Section VII: Analysis Plan

Baseline data collected prior to start of intervention:

Yes

Description of baseline data:

Student age, grade level, economic disadvantage, race/ethnicity, gender, emergent bilingual learner, special education, gifted, and baseline achievement; teacher race/ethnicity and years of experience, school Title I status.

Covariates you plan to include in the model:

English Language Learner Status, Free and Reduced Lunch Status, Gender, Grade, Age (decimal years), Gifted, Race, Special Education Status, Student Pretest

Covariates you plan to include in the model:

Aggregate of Baseline Scores, Aggregate of Individual Characteristics, teacher race and years of experience

Covariates you plan to include in the model:

Aggregate of Baseline Scores, Aggregate of Individual Characteristics, school Title I status

Analytic model:

<p>Analytic model is detailed in section VIII: Additional Materials.</p>

Plan to handle cases with missing outcome data:

Delete cases with missing data for the outcome being analyzed

Comments:

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Section VIII: Additional Information**Links:**

No links have been added yet.

Files:

File Name: [Analytic plan 17289.1v1.pdf](#)

Description:

Comments:

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