

# IXL Math

## Nonregulatory ESSA Standards Evidence Review & What Works Clearinghouse Standards Review

<b>ESSA (Every Student Succeeds Act) Evidence Level</b>	<b>Moderate (Tier 2):</b> SRI review indicates there is at least one well-designed and well-implemented quasi-experimental study on the intervention indicating positive effects.
<b>WWC (What Works Clearinghouse) Standards</b>	<b>Meets Evidence Standards with Reservations:</b> SRI review indicates the study fulfills the design, analytic, and technical requirements of WWC v4.1 Group Design Standards.
<b>Study report reviewed</b>	Bashkov, B. M. (2021). <i>Assessing the impact of IXL Math over three years: A quasi-experimental study</i> . IXL. <a href="https://www.ixl.com/materials/us/research/IXL_Math_3-Year_QED_ESSA_Tier_2.pdf">https://www.ixl.com/materials/us/research/IXL_Math_3-Year_QED_ESSA_Tier_2.pdf</a>
<b>Provider</b>	<b>IXL.</b> More information can be found at <a href="https://www.ixl.com">https://www.ixl.com</a>

IXL contracted with SRI Education for an independent review of a quasi-experimental study they conducted: “Assessing the Impact of IXL Math over Three Years: A Quasi-Experimental Study.”

The study author conducted a retrospective analysis to investigate the extent to which school use of IXL Math during a three-year period was associated with higher rates of proficiency on statewide assessments.

### IXL Math Description

IXL Math is a personalized learning program designed to help students build academic skills from pre-K to calculus that are aligned to state standards and popular textbook series. Students master skills at their own pace through interactive questions that adapt in difficulty, built-in support, and motivating awards. Teachers can use IXL Math’s Real-Time Diagnostic and analytic reports to inform and differentiate instruction. To learn more, visit <https://www.ixl.com/math>.

### Study Sample

The study included elementary, elementary/middle, and middle schools serving students in grades 3 through 8 in Oklahoma during the three school years from fall 2016 to spring 2019. A student was considered an IXL user if they answered at least one question on IXL. A school was considered a treatment school if the three-year average of student use was at least 10%. Comparison schools did not adopt IXL Math during any of the three school years.

The authors used one-to-one propensity score matching without replacement to create equivalent treatment and comparison groups of schools at baseline. The resulting sample comprised 179 treatment schools and 179 matched comparison schools (out of 822 non-treatment schools in the state) with nearly identical characteristics on a pre-intervention measure of proficiency and several school-level measures describing student characteristics.

## Author's Findings

The outcome of interest was math achievement as measured by the school proficiency rate on the Oklahoma School Testing Program Math assessment in spring 2019. The school proficiency rate was defined as the percentage of students categorized as proficient or advanced on the test at the end of the three-year study period.

Controlling for prior achievement, school characteristics, and school-level measures of student demographics, schools using IXL Math had statistically significant higher math achievement than similar schools not using the intervention. The proficiency rate at IXL Math schools was 3.6 percentage points higher than comparison schools, corresponding to a school-level standardized mean difference of 0.228.

## Evidence Justification

SRI determined that this study provides **moderate evidence** for IXL Math efficacy in grades 3–8 over a three-year period according to the ESSA levels of evidence provided by the U.S. Department of Education guidelines<sup>1</sup> for the following reasons:

- Multiple members of the SRI review team who were certified in WWC v4.1 Group Design Standards<sup>2</sup> assessed the study as fulfilling the design, analytic, and technical requirements for a WWC study rating of *Meets Evidence Standards with Reservations*. This is sufficient for the study to be considered a “well-designed and well-implemented quasi-experimental study” for the purpose of fulfilling ESSA evidence criteria.
- The study showed a positive statistically significant effect of IXL Math on student math achievement in grades 3-8.
- The study has a large and multisite sample. For this purpose, the analytic sample is considered to be “large” as it consists of 350 or more individual schools and “multisite” as it consists of schools across multiple local education agencies.

### Strong Evidence

(well-designed, well-implemented experimental study)

### Moderate Evidence

(well-designed, well-implemented quasi-experimental study)

### Promising Evidence

(correlational study with statistical controls for selection bias)

### Demonstrates a Rationale

(research-informed theory of action)

SRI did not conduct a literature review or scan of evidence related to IXL Math’s effect on student math achievement. Therefore, we cannot fully assess whether the study is overridden by other evidence indicating a significant unfavorable effect of IXL Math on student math achievement. Our assessment of moderate evidence assumes no such unfavorable evidence exists.

Additionally, for a state/district/school to consider an intervention as a Tier 2 evidence-based practice, the setting or the sample from the study should overlap with the population or setting proposed to receive the intervention.

<sup>1</sup> The Department’s *Non-Regulatory Guidance: Using Evidence to Strengthen Education Investments*, <https://ed.gov/policy/elsec/leg/essa/guidanceuseseseinvestment.pdf>, gives definitions of the levels of evidence.

<sup>2</sup> SRI staff successfully completed the WWC training and performance assessment covering the design, analysis, and technical concepts and standards required for performing WWC reviews of randomized controlled trial and quasi-experimental design studies in education.

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