Accelerated Math® Meets the “Evidence-Based” Requirements of ESSA

To meet the requirements of the Every Student Succeeds Act (ESSA), educators must select activities, strategies, or interventions that are evidence-based. This document explains those standards, and how Renaissance Accelerated Math® meets them.

What is an “evidence-based” intervention?

Section 8101(21)(A) of the Elementary and Secondary Education Act (ESEA), as amended by ESSA, defines “evidence-based” as follows:

“(21) Evidence-based.—
“(A) In general.—Except as provided in subparagraph (B), the term ‘evidence-based’, when used with respect to a State, local educational agency, or school activity, means an activity, strategy, or intervention that—
“(i) demonstrates a statistically significant effect on improving student outcomes or other relevant outcomes based on—
“(I) strong evidence from at least 1 well-designed and well-implemented experimental study;
“(II) moderate evidence from at least 1 well-designed and well-implemented quasi-experimental study; or
“(III) promising evidence from at least 1 well-designed and well-implemented correlational study with statistical controls for selection bias; or
“(ii)(I) demonstrates a rationale based on high-quality research findings or positive evaluation that such activity, strategy, or intervention is likely to improve student outcomes or other relevant outcomes; and
“(II) includes ongoing efforts to examine the effects of such activity, strategy, or intervention.

Department of Education Guidance on Using Evidence

In September 2016, the Department of Education issued a guidance document to provide state and local education agencies (SEAs and LEAs) with non-regulatory recommendations (i.e. non-binding or legally enforced) for selecting and using evidence-based interventions (used generally to mean any practices, activities, etc., not just those aimed at struggling students). The guidance is split into two sections:

Part I includes 5 steps that form a framework to guide an SEA’s or LEA’s choice of intervention and to strengthen its effectiveness once implemented:

- Step 1: Identify local needs
- Step 2: Select relevant, evidence-based interventions – Part II of the document is designed to help guide this step.

1 https://www.congress.gov/114/plaws/publ95/PLAW-114publ95.pdf
• Step 3: Plan for implementation
• Step 4: Implement – This step acknowledges the importance of program implementation on an intervention’s success. There is an emphasis on collecting implementation data and using it to monitor and adjust the program.
• Step 5: Examine and reflect – Suggests the use of performance monitoring to track progress toward program objectives and the use of evaluations of effectiveness that yield strong or moderate evidence to determine if desired outcomes were achieved. A free tool called “RCT Yes” is suggested as a resource to aid in intervention-data analysis.

These steps, framed as a cycle to promote continuous improvement, present a straightforward guide for SEA and LEA stakeholders to follow in their efforts to choose an evidence-based intervention that will meet their needs, insure it is implemented well, and evaluate whether it attains the desired goals.

Part II of the document provides guidance to help stakeholders understand the meaning and depth of what constitutes an “evidence-based” intervention, with the goal of allowing them to choose a well-supported intervention to implement (Part 1, Step 2), as well as help them to design a sufficiently rigorous evaluation of their chosen intervention once it is put into place (Part 1, Step 5).

The definition of what qualifies as an evidence-based intervention, and the levels of evidence described in Part II of the guidance document are defined in Section 8101 (21) (A) of the Elementary and Secondary Education Act (ESEA) of 1965, which was amended by the Every Student Succeeds Act (ESSA) of 2015. To summarize, the ESEA defines an evidence-based intervention as one that demonstrates a statistically significant effect on student outcomes through at least one study showing strong, moderate, or promising evidence, or the ability to demonstrate a rationale. It further defines strong, moderate, and promising evidence as being derived from well-designed and well-implemented experimental (strong) or quasi-experimental (moderate) studies, or from correlational studies that employed statistical controls for selection bias (promising evidence). The ESSA also considers interventions that demonstrate a rationale as evidence-based, meaning the intervention is backed by a well-defined logic model informed by research and there is an effort to study its effect on a relevant outcome planned or underway.

The guidance document makes it clear that the Department of Education allows a wide range of research study types in support of its requirement that interventions be evidence-based. It also seems to grant a significant degree of autonomy to SEAs and LEAs in choosing an intervention that, while may have varying degrees of rigor of evidence, will best suit the specific needs of its students and stakeholders. For instance, the guidance document emphasizes allowing SEAs and LEAs to choose an intervention that “will best serve their needs” (p. 4) and suggests that stakeholders “consider the entire body of relevant evidence” (pp. 4 & 8) when examining the types of evidence supporting an intervention, while prioritizing more rigorous studies.

What does this mean for Accelerated Math?

Accelerated Math has long been supported by high-quality evidence of effectiveness gathered through many types of rigorous studies, including those with experimental, quasi-experimental, and correlational designs. Here are lists of studies that meet the standards of ESEA/ESSA and qualify Accelerated Math as an evidence-based intervention.

- 3 studies provide Strong Evidence for the effectiveness of Accelerated Math
- 3 studies provide Moderate Evidence for the effectiveness of Accelerated Math
- 4 independent evaluations of Accelerated Math speak to requirement (ii)(I)

3 https://www.rct-yes.com/
Strong Evidence


In a (2007) study of 1,800+ students in 8 U.S. schools in grades 2–8, teachers used Accelerated Math to monitor student progress and manage instruction. Ysseldyke and Bolt found that level of implementation was key to student achievement in the Accelerated Math group, with high-implementing students experiencing significantly higher gains than the low-implementing and no-Accelerated Math groups.


Springer, Pugalee, and Algozzine (2007) focused their investigation on high school students who had previously failed the Arizona high-stakes math test. Twenty-eight students were randomly assigned to use Accelerated Math as part of a year-long intervention. The Accelerated Math group experienced significantly higher gains than control students. While more than half the Accelerated Math group passed the subsequent exam, only two students from the control group achieved a passing score.


Lambert, Algozzine, and McGee (2014) studied ethnically and socioeconomically diverse students in grades 2–5 at 3 Midwestern schools. Classes assigned to the treatment group used Accelerated Math for progress monitoring and practice with the school’s curriculum; the control group used only the curriculum. Accelerated Math students outperformed the control students.

Moderate Evidence


In this multi-year analysis of math achievement in grades 3–8 at 11 Accelerated Math schools and 11 matched control schools, Nunnery and Ross (2007) found that both elementary and middle school students benefited from using Accelerated Math, especially at high-implementing schools.


Ysseldyke and Tardrew (2007) utilized a large and diverse sample of 125 schools and over 2,000 students from 24 states in grades 3–10 to compare the math achievement of students whose teachers used Accelerated Math as a progress-monitoring and instructional management system with students in a control group. Gains on Star Math favored students in the treatment group across all grade and achievement levels, as well as those who implemented the program at higher levels.

Burns, Klingbeil, and Ysseldyke (2010) examined data for 360 randomly selected elementary schools in 4 states to compare 3 student groups: students using Accelerated Math (referred to as a technology-enhanced formative evaluation system) for over 5 years, for 1 to 4 years, and not at all. The groups using Accelerated Math (>5 years and <5 years) had significantly more students scoring proficient on their states’ high-stakes tests than the control group. Researchers also found that the achievement gap between control schools with primarily white and primarily ethnic-minority populations did not exist at the treatment schools.

**Independent Reviews**

Several independent organizations have reviewed the program’s research base and offered positive reviews or endorsements.


The Council of Administrators of Special Education (CASE) endorsed Accelerated Math.


National Dropout Prevention Center/Network found Accelerated Math has “strong evidence of effectiveness” at Elementary, Middle School, and High School.


Accelerated Math is one of the highly rated Mastery Measures included in the National Center on Intensive Intervention’s review of Progress Monitoring Tools in grades 1–12. A Mastery Measure monitors a student’s successive mastery of a hierarchy of objectives.


The report found that Accelerated Math increased student math achievement by an average of 20 percentage points on Criterion-Referenced Tests. This was the largest average impact of 15 math programs reviewed, and Accelerated Math was qualified as a “High-Gain Program.”

To access more than 100 research pieces on Accelerated Math, including 22 peer-reviewed journal articles, please visit [http://research.renaissance.com/advancedsearch.asp](http://research.renaissance.com/advancedsearch.asp). Peer-reviewed studies are listed on [http://doc.renlearn.com/KMNet/R003559501GF7925.pdf](http://doc.renlearn.com/KMNet/R003559501GF7925.pdf).