

STANDARDS OF EVIDENCE FOR ELEMENTARY MATHEMATICS PROGRAM RATINGS

	What Works Clearinghouse (WWC)	Best Evidence Encyclopedia (BEE)
Extent of Review	9 studies of 5 programs	87 studies of 26 programs
Scope of Review	<ul style="list-style-type: none"> Grades K-5 (outcomes may be measured in later grades) Programs, products, practices, and policies that: <ul style="list-style-type: none"> Clearly delineate mathematics learning goals for students Are designed to directly affect student mathematics achievement Are based on text materials, computer software, videotapes, or any other materials base, or any combination thereof 	<ul style="list-style-type: none"> Grades K-6 (outcomes may be measured in later grades) Programs intended to enhance mathematics achievement of middle and high school students: <ul style="list-style-type: none"> Curricula (standard and alternative textbooks) Computer-Assisted Instruction (programs that use technology to enhance mathematics achievement) Instructional Process Programs (strategies such as cooperative learning, mastery learning and other approaches primarily intended to change teachers' instructional strategies)
Criteria for Inclusion of Research Studies	<ul style="list-style-type: none"> Published between 1985 and 2008 Empirical, quantitative studies employing random assignment or matched comparison group designs Must have been conducted in the United States Includes outcome measures aligned to the content of the intervention (i.e., computation skills measures for computation instruction) <ul style="list-style-type: none"> Standardized, nationally normed achievement tests Standardized state or local achievement tests Research-based or locally-developed assessments 	<ul style="list-style-type: none"> May have been conducted outside the United States, but report must be available in English Empirical, quantitative studies employing random assignment or matched comparison group designs Includes quantitative outcome measures of mathematics performance, such as standardized assessments (measures of mathematics objectives inherent only to the experimental group, and not control groups, are excluded) Minimum study duration of 12 weeks
+	<i>Positive Effects:</i> Two or more studies showing statistically significant positive effects. No studies showing statistically significant or substantively important negative effects	<i>Strong Evidence of Effectiveness:</i> One large randomized study and additional studies with a combined sample size of 500; weighted mean effect size of +0.20
+	<i>Potentially Positive Effects:</i> At least one study showing a statistically significant or substantively important positive effect	<i>Moderate Evidence of Effectiveness:</i> Two large matched studies, or smaller studies with a combined sample size of 500; weighted mean effect size of at least +0.20
~L	Not specified	<i>Limited Evidence of Effectiveness: Strong Evidence of Modest Effects:</i> Meet the criteria for "Moderate" but weighted mean effect size is +0.10 to +0.19 <i>Limited Evidence of Effectiveness: Weak Evidence with Notable Effect:</i> Weighted mean effect size at least +0.20 based on one or more qualifying studies insufficient in number or sample size to meet the criteria for "Moderate"
~M	<i>Mixed Effects:</i> Evidence of inconsistent effects	Not Specified

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~I	<i>No Discernible Effects:</i> No studies show a statistically significant or substantively important effect, either positive or negative	<i>Insufficient Evidence of Effectiveness:</i> Qualifying studies do not meet the criteria for “Limited”
-	<i>Potentially Negative Effects:</i> At least one study showing a statistically significant or substantively important negative effect	Not Specified
--	<i>Negative Effects:</i> Two or more studies showing statistically significant negative effects. No studies showing statistically significant or substantively important positive effects	Not Specified
U	<i>NA:</i> Outcome measure not included in studies reviewed	Not Specified
☒	<i>Does Not Meet Eligibility Screens:</i> Studies are outside the scope of the review <i>Does Not Meet Evidence Screens:</i> Studies do not meet criteria for inclusion	<i>No Qualifying Studies:</i> Studies are outside the scope of the review or do not meet inclusion standards

Sources:

Slavin, R. E., Lake, C., Chambers, B., Cheung, A., & Davis, S. (2009). *Effective beginning reading programs*. Baltimore, MD: Johns Hopkins University, Center for Data-Driven Reform in Education.

Available at: http://www.bestevidence.org/reading/begin_read/begin_read.htm

What Works Clearinghouse (2007). *WWC evidence review protocol for beginning reading interventions*. Washington, D.C.: Institute of Education Sciences, U.S. Department of Education.

Available at: <http://ies.ed.gov/ncee/wwc/references/wwcviewer/doc.aspx?docid=27&tocid=1>

What Works Clearinghouse (2007). *WWC topic report: Beginning reading*. Washington, D.C.: Institute of Education Sciences, U.S. Department of Education.

Available at: http://ies.ed.gov/ncee/wwc/reports/beginning_reading/topic/

What Works Clearinghouse (2008). *What Works Clearinghouse procedures and standards handbook (Version 2.0)*. Washington, D.C.: Institute for Education Sciences, U.S. Department of Education.

Available at: <http://ies.ed.gov/ncee/wwc/references/wwcviewer/doc.aspx?docid=19&tocid=1>

STANDARDS OF EVIDENCE FOR MIDDLE AND HIGH SCHOOL MATHEMATICS PROGRAM RATINGS

	What Works Clearinghouse (WWC)	Best Evidence Encyclopedia (BEE)	Urban Institute
Extent of Review	<p>9 studies of 5 programs</p> <ul style="list-style-type: none"> Grades 6-9 Curriculum-based programs central to students' regular learning activities that: <ul style="list-style-type: none"> Clearly delineate mathematics learning goals for students Directly assess students' mathematics achievement Cover one or more of the following areas: number and operations, algebra, geometry, measurement, data analysis and probability Extend instruction over the course of one semester or more Curricula may be based on text materials, computer software, videotapes, or any other materials base, or combination thereof. 	<p>102 studies of 24 programs</p> <ul style="list-style-type: none"> Grades 6-12 Programs intended to enhance mathematics achievement of middle and high school students: <ul style="list-style-type: none"> Curricula (standard and alternative textbooks) Computer-Assisted Instruction (programs that use technology to enhance mathematics achievement) Instructional Process Programs (strategies such as cooperative learning, mastery learning and other approaches primarily intended to change teachers' instructional strategies) 	<p>156 studies of 18 programs</p> <ul style="list-style-type: none"> Grades 6-12 Major mathematics curricula used at the middle and high school levels Included curricula developed as part of whole school reform efforts
Scope of Review			
Criteria for Inclusion of Research Studies	<ul style="list-style-type: none"> Published between 1983 and 2007 Empirical, quantitative studies employing random assignment or matched comparison group designs Includes outcome measures aligned to the content of the intervention (i.e., computation skills measures for computation instruction) <ul style="list-style-type: none"> Standardized, nationally normed achievement tests Standardized state or local achievement tests Research-based or locally-developed assessments 	<ul style="list-style-type: none"> Published between 1970 and 2008 Empirical, quantitative studies employing random assignment or matched comparison group designs May have been conducted outside the United States, but report must be available in English Includes quantitative outcome measures of mathematics performance, such as standardized assessments (measures of reading objectives inherent only to the experimental group, and not control groups, are excluded) Minimum study duration of 12 weeks Minimum treatment group size of 15 students and 2 teachers 	<p>Studies were expected to have:</p> <ul style="list-style-type: none"> Rigorous methodological design Measures of impact on student outcomes (which include, but are not limited to, test scores) Comparative data, cross-sectional or longitudinal, with experimental and quasi-experimental designs preferred over others High quality and valid data
+	<p><i>Positive Effects:</i> Two or more studies showing statistically significant positive effects. No studies showing statistically significant or substantively important negative effects</p>	<p><i>Strong Evidence of Effectiveness:</i> One large randomized study and additional studies with a combined sample size of 500; weighted mean effect size of +0.20</p>	<p><i>Strongest evidence of effectiveness:</i> Quantitative evidence that use of curricula in instruction elicits higher achievement than other curricula on both standardized and/or state tests AND on curriculum developed</p>

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+	<u>Potentially Positive Effects</u> : At least one study showing a statistically significant or substantively important positive effect	<u>Moderate Evidence of Effectiveness</u> : Two large matched studies, or smaller studies with a combined sample size of 500; weighted mean effect size of at least +0.20	tests.
~L	Not specified	<u>Limited Evidence of Effectiveness</u> : <u>Strong Evidence of Modest Effects</u> : Meet the criteria for "Moderate" but weighted mean effect size is +0.10 to +0.19 <u>Limited Evidence of Effectiveness</u> : <u>Weak Evidence with Notable Effect</u> : Weighted mean effect size at least +0.20 based on one or more qualifying studies insufficient in number or sample size to meet the criteria for "Moderate"	Programs with studies that met evidence screens and contained some evidence of positive effects, but were not assigned a rating of Strongest Evidence of Effectiveness by the Urban Institute, were assigned a rating of ~L: Limited Evidence of Effectiveness by E ³ Alliance.
~M	<u>Mixed Effects</u> : Evidence of inconsistent effects	Not Specified	
~I	<u>No Discernible Effects</u> : No studies show a statistically significant or substantively important effect, either positive or negative	<u>Insufficient Evidence of Effectiveness</u> : Qualifying studies do not meet the criteria for "Limited"	
-	<u>Potentially Negative Effects</u> : At least one study showing a statistically significant or substantively important negative effect	Not Specified	
--	<u>Negative Effects</u> : Two or more studies showing statistically significant negative effects. No studies showing statistically significant or substantively important positive effects	Not Specified	
U	<u>NA</u> : Outcome measure not included in studies reviewed	Not Specified	
☒	<u>Does Not Meet Eligibility Screens</u> : Studies are outside the scope of the review <u>Does Not Meet Evidence Screens</u> : Studies do not meet criteria for inclusion	<u>No Qualifying Studies</u> : Studies are outside the scope of the review or do not meet inclusion standards	

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Sources:

Clewell, B. C., Cosentino de Cohen, C., Campbell, P. B., & Perlman, L. (2006). *Review of evaluation studies of mathematics and science curricula and professional development models*. Washington, D.C.: Education Policy Center, The Urban Institute.

Available at: <http://www.urban.org/publications/311150.html>

Slavin, R. E., Lake, C., Chambers, B., Cheung, A., & Davis, S. (2009). *Effective beginning reading programs*. Baltimore, MD: Johns Hopkins University, Center for Data-Driven Reform in Education.

Available at: http://www.bestevidence.org/reading/begin_read/begin_read.htm

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Available at: <http://ies.ed.gov/ncee/wwc/references/doc.aspx?docid=19&docid=1>