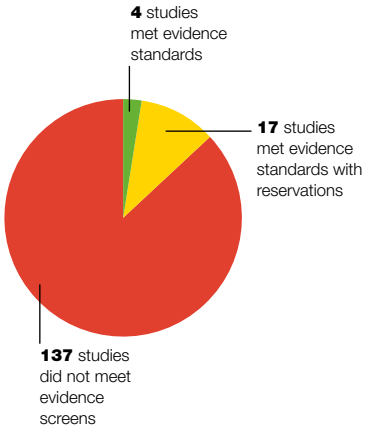
What Works Clearinghouse

WWC identified 158 empirical studies of 34 middle school math programs



The What Works Clearinghouse (WWC) reviewed interventions to promote middle school students' math knowledge and skills.[1] Because there is some variation in how school districts organize middle school, we considered curricula aimed at students in grades 6 through 9, covering one or more of the following content areas: numbers and operations, algebra, geometry, measurement, and data analysis and probability. Only core, comprehensive math curricula were eligible for inclusion in this review.[2] These curricula extend over the course of one semester or more, are central to students' regular school instruction, and are based on any combination of text materials, manipulatives, computer software, videotapes, and other materials.

We looked at 361 studies. Of these, 203 appeared to be studies of practices or other interventions that did not qualify for our review. Of the 158 remaining studies, 21 studies of 7 curricula met our evidence standards, 4 without reservations and 17 with reservations. Altogether, the WWC looked at 34 interventions: 7 had studies that met WWC standards with or without reservations and 27 had studies that did not meet WWC evidence screens. No eligible studies were identified for an additional 16 programs at the time of this review. (The identification of eligible programs ended in September 2005, and that of eligible studies in July 2006.)

The WWC rated the effectiveness of middle school math curricula based on the available research evidence. In looking at math achievement for the 7 curricula:

- *I Can Learn® Pre-Algebra and Algebra* had positive effects.
- *Saxon Middle School Math* had positive effects.
- *Cognitive Tutor* had potentially positive effects.
- *The Expert Mathematician* had potentially positive effects.
- *UCSMP Algebra* had potentially positive effects.

Two other curricula had mixed effects on math achievement.

This review summarizes the second wave of intervention reports produced in 2006–07.
www.whatworks.ed.gov

1. Findings for math programs for the elementary school level are available in the WWC Elementary School Math Topic Report.
2. Supplemental math programs may be considered at a later date.

Intervention Effectiveness Ratings for Middle School Math

Each middle school math curriculum that had at least one study meeting WWC standards (with or without reservations) received a rating of effectiveness in math achievement. The rating aims to characterize the existing evidence, taking into account the quality of the research design, the statistical significance of the findings, the size of the difference between the average math achievement for students in the intervention and comparison conditions, and the consistency of findings across studies.

The research evidence can be rated as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative (see the WWC Intervention Rating Scheme). Table 1 shows the effectiveness ratings for the 7 middle school math curricula.

Table 1 Effectiveness ratings for 7 middle school math curricula

Intervention name	Rating of effectiveness	Extent of evidence
Cognitive Tutor® Algebra I *(http://www.carnegielearning.com)*	Potentially positive	Moderate to large
Connected Mathematics Project (CMP) *(http://connectedmath.msu.edu)*	Mixed	Moderate to large
I CAN Learn® Pre-Algebra and Algebra *(www.icanlearn.com)*	Positive	Moderate to large
Saxon Middle School Math *(www.saxonpublishers.com)*	Positive	Moderate to large
The Expert Mathematician *(www.expertmath.org)*	Potentially positive	Small
Transition Mathematics *(http://www.phschool.com/atschool/ucsmp/index.html)*	Mixed	Moderate to large
University of Chicago School Mathematics Project (UCSMP) Algebra *(http://www.phschool.com/atschool/ucsmp/index.html)*	Potentially positive	Moderate to large

Note: WWC intervention reports describe each curriculum and provide information on the students, cost, and scope of use. To view the intervention reports, please click on the program name or go to www.whatworks.ed.gov. Following each curriculum name is the developer's website address. The research evaluated addresses some but not all grade levels targeted by these curricula. Grade levels are related to student age and may affect outcomes. For a comparison of targeted grade levels and grade levels in the studies reviewed by the WWC, see Appendix A2.

Key

- Positive effects: strong evidence of a positive effect with no overriding contrary evidence
- Potentially positive effects: evidence of a positive effect with no overriding contrary evidence
- Mixed effects: evidence of inconsistent effects
- No discernible effects: no affirmative evidence of effects
- Potentially negative effects: evidence of a negative effect with no overriding contrary evidence
- Negative effects: strong evidence of a negative effect with no overriding contrary evidence

Average improvement indices

The WWC computes an average improvement index for each study, as well as an average improvement index across studies of the same intervention (see the Technical Details of WWC-Conducted Computations).

The improvement index represents the difference between the percentile rank of the average student in the intervention condition and the percentile rank of the average student in the comparison condition. It can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group. Unlike the rating of effectiveness, which is based on four factors, the improvement index is based only on the size of the difference between the intervention and the comparison conditions.

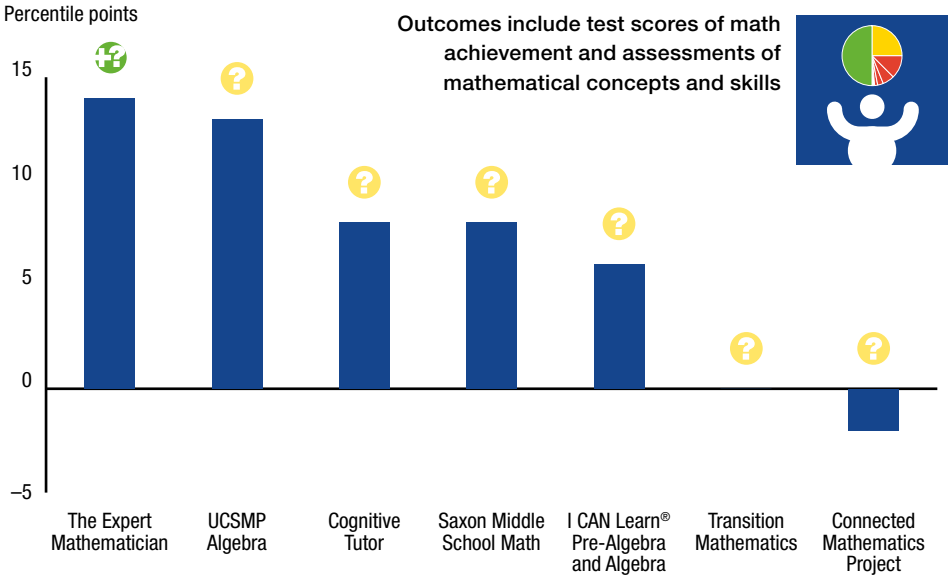
Math achievement

Math achievement includes three types of outcome measures:

- Standardized, nationally normed achievement tests that are appropriate for elementary students (e.g., Comprehensive Test of Basic Skills, Wide Range Achievement Test)
- Standardized state or local tests of math achievement
- Research-based or locally developed tests or instruments that assess students' mathematical concepts or skills

We reviewed math achievement outcomes for 7 curricula, and the average improvement index ranged from –2 to +14 percentile points (figure 1).[3]

Figure 1 Math achievement: average improvement



3. To enable comparisons across interventions, improvement indices are calculated from student-level findings. In the case of the *Connected Mathematics Project (CMP)* and *Saxon Middle School Math,* the average improvement index does not represent all of the findings included in the WWC intervention reports, as some findings reviewed were reported on the classroom or school level and student-level improvement indices could not be computed. For further details please see Technical Details of WWC-Conducted Computations.

Table 2 Curricula reviewed with no studies meeting WWC evidence screens

A+ny where Learning System *(no website available)*	**Logo** *(no website available)*
Accelerated Math *(http://www.renlearn.com/mathrenaissance/)*	**Macmillan/McGraw-Hill** *(http://www.mhschool.com/math/2003/student/index.html)*
Addison-Wesley Mathematics *(http://www.scottforesman.com/)*	**Math Advantage** *(http://www.hbschool.com/menus/math_advantage.html)*
Adventures of Jasper Woodbury Series *(http://peabody.vanderbilt.edu/projects/funded/jasper/Jasperhome.html)*	**Math Applications and Connections** *(http://www.glencoe.com/)*
	Math Renaissance® *(http://research.renlearn.com/success/mathsuccess.asp)*
Algebra Project *(http://www.algebra.org/)*	**Mathematics in Context (MiC)** *(http://showmecenter.missouri.edu/showme/mic.shtml)*
Algebraic Thinking *(http://www.algebraicthinking.com/)*	**Mathematics Plus** *(no website available)*
Appalachia Model Mathematics Program *(no website available)*	**MathScape: Seeing and Thinking Mathematically** *(http://www2.edc.org/mathscape/)*
CompassLearning *(http://www.compasslearning.com/)*	**MathThematics** *(http://www.mcdougallittell.com/ml/math.htm?lvl=4&ID=1005500000030872)*
Connecting Math Concepts (CMC) *(https://www.sraonline.com/)*	**Middle Grades Math** *(Scott Foresman-Addison Wesley; no website available)*
CORD Applied Math *(http://www.cordcommunications.com/Store/Contextual_Mathematics/CORD_Applied_Math.asp)*	**Middle School Mathematics through Applications Program (MMAP)** *(http://mmap.wested.org/)*
	Moving with Math® Extensions *(http://www.movingwithmath.com/summer_math/welcome2.htm)*
Core Plus Mathematics Project *(http://www.wmich.edu/cpmp/)*	**Moving with Math® Math by Topic** *(http://www.movingwithmath.com/middle_school/middle_school.htm)*
Countdown Video IGAP Intervention Tape *(no website available)*	**Opening Eyes to Mathematics by The Math Learning Center** *(http://www.mathlearningcenter.org/curriculum/elementary/open-eyes.asp)*
Destination Math *(http://www.riverdeep.net/portal/page?_pageid=336,1&_dad=portal&_schema=PORTAL)*	**Partnership for Access to Higher Mathematics** *(PATH Mathematics; no website available)*
	PLATO *(http://www.plato.com/)*
FUNdamentallyMATH® *(http://www.fundamentallymath.com/)*	**Real Math basal mathematics program** *(https://www.sraonline.com/rm_home.html)*
Heath Mathematics Connections *(no website available)*	**Reasoning Mind** *(http://www.reasoningmind.org/)*
Holt Middle School Math *(http://go.hrw.com/gopages/ma-msm.html)*	**Singapore Mathematics** *(http://www.singaporemath.com/)*
Integrated Mathematics, Science, and Technology (IMaST) *(http://www.cemast.ilstu.edu/programs/imast/index.shtml)*	**The Six Through Eighth Grade Mathematics (STEM) Project** *(no website available)*
	Scott Foresman Math Diagnostic & Intervention System *(http://www.successmaker.com/Subscriber/1,24/start.html)*
Key Math Teach and Practice *(http://ags.pearsonassessments.com/group.asp?nGroupInfoID=a6880)*	**Successmaker** *(http://www.pearsondigital.com/successmaker/)*
Larson Developmental Math Series *(http://college.hmco.com/instructors/catalog/demos/larson.html)*	**Unitedstreaming™** *(http://www.unitedstreaming.com/)*
Lightspan Achieve Now *(no website available)*	

Note: Following each program name is the developer's website address. The table includes all eligible programs with no studies and all eligible programs with no studies meeting evidence standards. Note that some of the programs listed in this table had evaluation studies that did not meet the WWC evidence screens because the programs were supplemental curricula rather than core curricula. Supplemental curricula may be considered when this topic review is updated.

For more information about studies reviewed and WWC methodology, please see the WWC Middle School Math Technical Appendices.

Appendix

Appendix A1 Extent of evidence

Intervention name	Number of studies	Sample size (schools/students)	Extent of evidence[1]
Cognitive Tutor	2	9/781	Moderate to large
Connected Mathematics Project (CMP)	3	100/14,696	Moderate to large
I CAN Learn® Pre-Algebra and Algebra	6	729/16,656	Moderate to large
Saxon Middle School Math	6	101/3,399	Moderate to large
The Expert Mathematician	1	1/70	Small
Transition Mathematics	3	49/972	Moderate to large
UCSMP Algebra	2	4/225	Moderate to large[2]

nr = not reported

1. A rating of "moderate to large" requires at least two studies and two schools across studies in one domain and a total sample size across studies of at least 350 students or 14 classrooms. Otherwise, the rating is "small."
2. The extent of evidence for *UCSMP Algebra* is considered to be moderate to large because, across studies, 14 classrooms were included at the time of analysis.

Appendix A2 Targeted population

Intervention name	Targeted students (grade levels)	Students in studies reviewed (grade levels)[1]
Cognitive Tutor	7–12	9
Connected Mathematics Project (CMP)	6–8	6–8
I CAN Learn® Pre-Algebra and Algebra	6–12	8–9
Saxon Middle School Math	6–9	6–9
The Expert Mathematician	6–9	8
Transition Mathematics	7–12	7–9
UCSMP Algebra	7–10	8–9

Note: This table compares targeted grade levels and the grade levels in the studies reviewed by the WWC. Grade levels are related to student age and may affect outcomes due to differences in the students' developmental stages as well as differences in school size and organization.

1. Some of the studies reviewed included students in grades 10 or above, but the findings for those students were not reviewed because those grades were outside the scope of this review.

Appendix A3 Summary of statistically significant[1] or substantively important[2] positive outcomes

	Math achievement	
Intervention name	**Statistically significant positive findings[3]**	**Math achievement across outcomes**
Cognitive Tutor		
Morgan & Ritter, 2002	Math achievement grades (end of first and second semesters)	Statistically significant, Substantively important
Schneyderman, 2001	ns	ns, nsi
Connected Mathematics Project (CMP)		
Ridgway, Zawojewski, Hoover, & Lambdin, 2002	ns	ns, nsi
Riordan & Noyce, 2001	Massachusetts Comprehensive Assessment System (MCAS)—math scores	ns[4]
Schneider, 2000	ns	ns, nsi
I CAN Learn® Pre-Algebra and Algebra		
Kirby, 2006, October	Louisiana Educational Assessment Program (LEAP) Grade 8 Mathematics Exam	Statistically significant, Substantively important
Kerstyn, 2001, Algebra 1	ns	ns, nsi
Kerstyn, 2001, Algebra 1 Honors	ns	ns, nsi
Kerstyn, 2001, MJ-3 pre-algebra	ns	ns, nsi
Kerstyn, 2001, MJ-3 Advanced	ns	ns, nsi
Kerstyn, 2002, October, Algebra 1	ns	ns, nsi
Kerstyn, 2002, October, Algebra 1 Honors	ns	ns, nsi
Kerstyn, 2002, October, MJ-3 pre-algebra	FCAT mathematics	Statistically significant, nsi
Kerstyn, 2002, October, MJ-3 Advanced	ns	ns, nsi
Kirby, 2004, September	General Mathematics CST	Statistically significant, Substantively important
Kirby, 2004a, November	Georgia Criterion-Referenced Competency Test (GCRCT) Math Test	Statistically significant, Substantively important
Kirby, 2005, January	Algebra 1 EOC test	Statistically significant, Substantively important
Saxon Middle School Math		
Williams, 1986	End-of-course math test	Statistically significant, Substantively important
Peters, 1992	ns	ns, nsi
Crawford & Raia, 1986	The California Achievement Test (CAT)	Statistically significant, Substantively important
Resendez, Fahmy, & Manley, 2005	The Texas Assessment of Academic Skills (TAAS)—TLI score; The Texas Assessment of Knowledge and Skills (TAKS)	Statistically significant, nsi
Resendez & Manley, 2005	ns	ns[4]
Roberts, 1994	ns	ns, nsi

(continued)

Appendix A3 Summary of statistically significant[1] or substantively important[2] positive outcomes *(continued)*

	Math achievement	
Intervention name	**Statistically significant positive findings[3]**	**Math achievement across outcomes**
The Expert Mathematician		
Baker, 1997	ns	ns, Substantively important
Transition Mathematics		
Baker, 1997	ns	ns, Substantively important negative effect
Hedges et al., 1986	Geometry Readiness	ns, nsi
Thompson et al., 2005	ns	ns, nsi
UCSMP Algebra		
Peters, 1992	ns	ns, nsi
Thompson et al., 2006	Algebra Readiness; Problem Solving and Understanding	ns, Substantively important

na = not studied
ns = not statistically significant
nsi = not substantively important

1. According to the WWC criteria, if a program finds a statistically significant effect, there is less than a 5% chance that this difference is due to chance. The level of statistical significance was calculated by the WWC and, where necessary, corrects for clustering within classrooms or schools, and for multiple comparisons. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation, see the WWC Tutorial on Mismatch. See the Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate the statistical significance.
2. For rating purposes, the WWC considers the statistical significance of the findings and the magnitude of the effect, also called the effect size. An average effect size is the sum of all the effect sizes of the student outcomes in a study in a single domain divided by the number of those outcomes. The WWC considers an average effect size across all student outcomes in one study in a given domain to be substantively important if it is equal to or greater than 0.25.
3. No studies showed statistically significant negative effects on math achievement.
4. Student-level effect size could not be computed for this study; whether or not the magnitude of the effect is substantively important is unknown. However, the statistical significance for this study is comparable to other studies and is included in the intervention rating. For further details, see Technical Details of WWC-Conducted Computations.

Appendix A4 Methodology

One hundred and fifty-eight studies provided data on 34 middle school math curricula and were classified by the strength of their designs.[1] To be fully reviewed, a study had to be a randomized controlled trial or a quasi experimental design with evidence of equating between the treatment and comparison groups.

Eligibility for review

Quasi experiments eligible for review include those equating through matching or statistical adjustment, regression discontinuity designs, and single case designs. However, no studies identified for the middle school math review used regression discontinuity or single case designs.

In judging the quality of the evidence, the review considered the properties of measurement instruments used in the studies, the percentage of the original study sample that was lost to follow-up, and any sample characteristics or events that might serve as alternative explanations for the observed effect. For details please see the WWC Evidence Standards. When results were reported for multiple time periods following sample enrollment, the longer term results were included in the review.

The research evidence for programs that have at least one study meeting WWC evidence standards with or without reservations is summarized in individual intervention reports posted on the WWC website. See http://www.whatworks.ed.gov. So far, 21 studies of 7 middle school programs have met evidence standards with or without reservations. The lack of evidence for the remaining programs does not mean that those programs are ineffective; some programs have not yet been studied using a study design that permits the WWC to draw any conclusions about their effectiveness. And some studies were not considered for rating of effectiveness purposes because insufficient information was reported to enable us to confirm statistical findings.

Rating of effectiveness

Each middle school math curriculum that had at least one study meeting WWC standards with or without reservations received a rating of effectiveness for math achievement. The rating of effectiveness aims to characterize the existing evidence base on the intervention within a given domain. The intervention effects based on the research evidence are rated as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.

The rating of effectiveness takes into account four factors: the quality of the research design, the statistical significance of the findings, the size of the difference between students in the intervention and the comparison conditions, and the consistency in findings across studies (see the WWC Intervention Rating Scheme).

The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. Because of these corrections, the level of statistical significance as calculated by the WWC may differ from the one originally reported by the study authors. For the formulas that we used to calculate statistical significance, see Technical Details of WWC-Conducted Computations. For an explanation, see the WWC Tutorial on Mismatch. If the average effect size across all outcomes in one study in a single domain is at least 0.25, it is considered substantively important, contributing toward the rating of effectiveness. See the technical appendices of the middle school math intervention report for further details.

Extent of evidence

The evidence base rating represents the size and number of independent samples that were assessed for the purposes of analysis of the program effects. A “moderate to large” evidence

1. No empirical studies were identified for additional 14 programs during the time period of this review.

Appendix A4 Methodology *(continued)*

base requires at least two studies and two schools across studies of at least 350 students or 14 classrooms. Otherwise, the evidence base is considered to be "small." The WWC is currently working to define a "large" evidence base. This term should not be confused with external validity, as other facets of external validity—such as variations in settings, important subgroups of students, implementation, and outcome measures—were not taken into account for the purposes of this rating.

Improvement Index

The WWC computes an improvement index for each individual finding. In addition, within each outcome domain, the WWC computes an average improvement index for each domain and each study as well as a domain average improvement index across studies of the same intervention (see the Technical Details of WWC Conducted Computations). The improvement index represents the difference between the percentile rank of the average student in the intervention condition and the percentile rank of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting results favorable to the intervention group. Unlike the rating of effectiveness, the improvement index is based only on the size of the difference between the intervention and the comparison conditions.

Appendix A5 References

Studies that met WWC standards

Cognitive Tutor® Algebra I

Morgan, P., & Ritter, S. (2002). *An experimental study of the effects of Cognitive Tutor Algebra I on student knowledge and attitude.* Retrieved November 22, 2006, from http://www.carnegielearning.com/research/research_reports/morgan_ritter_2002.pdf

I CAN Learn® Pre-Algebra and Algebra

Kirby, P. C. (2006, October). *I CAN Learn® in Orleans Parish Public Schools: Effects on LEAP 8th grade math achievement, 2003–2004*. (Available from the ed-cet, Inc., 2301 Killdeer Street, New Orleans, LA 70122)

Additional citation for this study:

Kirby, P. C. (2004b, November). *I CAN Learn® in Orleans Parish Public Schools effects on LEAP 8th grade math achievement, 2003–2004.* (Available from the ed-cet, Inc., 2301 Killdeer Street, New Orleans, LA 70122)

The Expert Mathematician

Baker, J. J. (1997). Effects of a generative instructional design strategy on learning mathematics and on attitudes towards achievement. *Dissertation Abstracts International, 58*(7), 2573A. (UMI No. 9800955)

Saxon Middle School Math

Williams, D. D. (1986). *The incremental method of teaching algebra I*. Kansas City: University of Missouri.

Transition Mathematics

Baker, J. J. (1997). Effects of a generative instructional design strategy on learning mathematics and on attitudes towards achievement. *Dissertation Abstracts International, 58*(7), 2573A. (UMI No. 9800955)

Studies that met WWC standards with reservations

Cognitive Tutor® Algebra I

Schneyderman, A. (2001, September). *Evaluation of the Cognitive Tutor Algebra 1 program.* Unpublished manuscript. (Available from Miami-Dade County Public Schools Office of Evaluation and Research, 1500 Biscayne Boulevard, Miami, FL 33132)

Connected Mathematics Project

Ridgway, J. E., Zawojewski, J. S., Hoover, M. N., & Lambdin, D. V. (2002). Student attainment in the Connected Mathematics curriculum. In S. L. Senk & D. R. Thompson (Eds.), *Standards-based school mathematics curricula: What are they? What do students learn?* (pp. 193–224). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Additional citation for this study:

Hoover, M., Zawojewski, J. S., & Ridgway, J. E. (1997, April). *Effects of the Connected Mathematics Project on student attainment*. Paper presented at the meeting of the American Educational Research Association, Chicago, IL.

Riordan, J. E., & Noyce, P. E. (2001). The impact of two standards-based mathematics curricula on student achievement in Massachusetts. *Journal for Research in Mathematics Education, 32*(4), 368–398.

Schneider, C. L. (2000). Connected Mathematics and the Texas Assessment of Academic Skills. *Dissertation Abstracts International*, *62*(02), 503A. (UMI No. 3004373)

I CAN Learn® Pre-Algebra and Algebra

Kerstyn, C. (2001). *Evaluation of the I CAN Learn® mathematics classroom: First year of implementation (2000–2001 school year).* (Available from the Division of Instruction, Hillsborough County Public Schools, 901 East Kennedy Blvd., Tampa, FL 33602)

Kerstyn, C. (2002, October). *Evaluation of the I CAN Learn® mathematics classroom: Second year of implementation (2001–2002 school year).* (Available from the Division of Instruction, Hillsborough County Public Schools, 901 East Kennedy Blvd., Tampa, FL 33602)

Appendix A5 References *(continued)*

Kirby, P. C. (2004, September). *Comparison of I Can Learn® and traditionally-taught 8th grade general math student performance on the California Standards Test, Spring 2004*. (Available from the ed-cet, Inc., 2301 Killdeer Street, New Orleans, LA 70122)

Kirby, P. C. (2004, November). *Comparison of I CAN Learn® and traditionally-taught 8th grade student performance on the Georgia Criterion-Referenced Competency Test.* Unpublished manuscript.

Kirby, P. C. (2005, January). *I CAN Learn® Algebra I in Catoosa County, Georgia*. (Available from the ed-cet, Inc., 2301 Killdeer Street, New Orleans, LA 70122)

Saxon Middle School Math

Crawford, J., & Raia, F. (1986). *Analyses of eighth grade math texts and achievement.* Oklahoma City, OK: Oklahoma City Public Schools, Planning, Research, and Evaluation Department.

Peters, K. G. (1992). Skill performance comparability of two algebra programs on an eighth-grade population. *Dissertation Abstracts International, 54*(01), 77A. (UMI No. 9314428)

Resendez, M., & Manley, M. A. (2005). *The relationship between using Saxon Elementary and Middle School Math and student performance on Georgia statewide assessments.* Orlando, FL: Harcourt Achieve.

Resendez, M., Fahmy, A., & Manley, M. A. (2005). *The relationship between using Saxon Middle School Math and student performance on Texas statewide assessments*. Retrieved from Harcourt Achieve Web site: http://saxonpublishers.harcourtachieve.com/HA/correlations/pdf/s/SXMath_Middle_TX_research_web.pdf

Roberts, F. H. (1994). The impact of Saxon Mathematics program on group achievement test scores. *Dissertation Abstracts International, 55*(06), 1498A. (UMI No. 9430198)

Transition Mathematics

Hedges, L. V., Stodolsky, S. S., Mathison, S., & Flores, P. V. (1986). *Transition mathematics: Field study* (Evaluation Rep. No. 85/86-TM-2). Chicago: University of Chicago School Mathematics Project.

Thompson, D. R., Senk, S. L., Witonsky, D., Usiskin, Z., & Kaeley, G. (2005). *An evaluation of the second edition of UCSMP Transition Mathematics*. Chicago: University of Chicago School Mathematics Project.

University of Chicago School Mathematics Project (UCSMP) Algebra

Peters, K. G. (1992). Skill performance comparability of two algebra programs on an eighth-grade population. *Dissertation Abstracts International*, *54*(01), 77A. (UMI No. 9314428)

Thompson, D. R., Senk, S. L., Witonsky, D., Usiskin, Z., & Kaeley, G. (2006). *An evaluation of the second edition of UCSMP Algebra.* Chicago: University of Chicago School Mathematics Project.

Studies that did not meet evidence screens

Accelerated Math

Bach, S. (2001). *An evaluation of Accelerated Math in a seventh grade classroom.* Madison, WI: Renaissance Learning, Inc.[1]

Renaissance Learning, Inc. (1999). *Accelerated Math and Math Renaissance improve math performance (Scientific Research: Quasi-Experimental series).* Retrieved January 5, 2006, from http://research.renlearn.com/research/pdfs/10.pdf[2]

Sadusky, L. A., & Brem, S. K. (2002). *The use of Accelerated Math in an urban Title I elementary school.* Tempe: Arizona State University.[2]

Spicuzza, R., & Ysseldyke, J. E. (1999). *Using Accelerated Math to enhance instruction in a mandated summer school program.* Minneapolis, MN: Minneapolis Public Schools.[3]

Spicuzza, R. Ysseldyke, J. E., Lemkuil, A. Kosciolek, S., Boys, C., & Teelucksingh, E. (2001). *Effects of using a curriculum-based monitoring system on the classroom instructional environment and math achievement.* Minneapolis: National Center on Educational Outcomes, University of Minnesota.[3]

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Ysseldyke, J. E., Spicuzza, R., & McGill, S. (2000). *Changes in mathematics achievement and instructional ecology resulting from implementation of a learning information system.* Retrieved January 5, 2006, from University of Minnesota, National Center on Educational Outcomes Web site: http://www.education.umn.edu/NCEO/OnlinePubs/EBASSreport.pdf[2]

Ysseldyke, J. E., & Tardrew, S. P. (2002). *Differentiating math instruction: A large scale study of Accelerated Math (Final report).* Madison, WI: Renaissance Learning, Inc.[3]

Ysseldyke, J. E., Tardrew, S. P., Betts, J., Thill, T., & Hannigan, E. (2003). *Use of an instructional management system to enhance math instruction of gifted and talented students.* Madison, WI: Renaissance Learning, Inc.[3]

Ysseldyke, J., Spicuzza, R., Kosciolek, S., Teelucksingh, E., Boys, C., & Lemkuil, A. (2003). Using a curriculum-based instructional management system to enhance math achievement in urban schools. *Journal of Education for Students Placed at Risk, 8*(2), 247–265.[3]

Addison-Wesley Mathematics basal program

Nerenz, A. G., Stewart, D. M., & Webb, N. L. (1980). *Scaling and summary statistics for the curriculum implementation and program customizing variables. Comparative study of phase IV IGE evaluation project. Phase IV, project paper 80-6.* Madison: Wisconsin University, Research and Development Center for Individualized Schooling. (ERIC Document Reproduction Service No. ED252549)[4]

Webb, N., & Yasui, E. (1992). *The influence of problem context on mathematics performance. Project 2.1: Alternative approaches to assessment in mathematics and science.* Los Angeles: National Center for Research on Evaluation, Standards, and Student Testing. (ERIC Document Reproduction Service No. ED349331)[5]

Adventures of Jasper Woodbury Series

Northeastern Illinois University, Department of Teacher Education. (2000). *Use of interactive video technology to teach middle school mathematics in Chicago schools, September—November, 2000. Final evaluation report.* Chicago: Author. (ERIC Document Reproduction Service No. ED451055)[6]

Algebra Project

Adair, J. D. (1996). Priming the pump: A study of the Algebra Project and its impact on student achievement in mathematics. *Dissertation Abstracts International, 57*(07), 2921A. (UMI No. 9638729)[2]

Davis, F. E., & West, M. M. (2000a). *The impact of Algebra Project on mathematics achievement.* (Available from the Program Evaluation and Research Group, Lesley College, 29 Everett Street, Cambridge, MA 02138) **(Study: Brinkley)**[2]

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Interventions with no studies

A+ny where Learning System
Heath Mathematics Connections (textbook series)
Holt Middle School Math (textbook)
Key Math Teach and Practice
Larson Developmental Math Series
Lightspan Achieve Now
Macmillan/McGraw-Hill
Math Advantage (textbook series)
Math Applications and Connections (textbook series published by Glencoe)
Mathematics Plus (textbook series published by Harcourt)
MathScape: Seeing and Thinking Mathematically
Middle Grades Math (textbook series, published by ScottForesman/AddisonWesley)
Middle School Mathematics through Applications Program (MMAP)
Real Math basal mathematics program
Reasoning Mind
Scott Foresman Math Diagnostic & Intervention System

1. Confound: there was only one intervention unit and/or one comparison unit, so the analysis could not separate the effects of the intervention from other factors.
2. Lack of evidence for baseline equivalence: the study, which uses a quasi-experimental design, does not establish that the comparison group was equivalent to the intervention group at baseline.
3. Intervention is not relevant: the intervention does not meet the WWC standards of a core middle school math curriculum.
4. Study is outside the time frame of the review: the parameters for this WWC review specified that interventions were implemented after 1983 but this study involves students that began the intervention prior to 1983.
5. Intervention is not relevant: the implementation length of the curriculum is too short.
6. Does not use a strong causal design: this study does not use a comparison group.
7. Does not use a strong causal design: this study provides no information on the research design and has no authorship.
8. Outcomes measures are not relevant to this review.
9. Does not use a strong causal design: this is a qualitative study.
10. Lack of evidence for baseline equivalence: the study, which was reviewed as a quasi-experimental design, does not establish that the comparison group was equivalent to the intervention group at baseline. This study, which was designed as a regression discontinuity design, does not properly assign students at the cutoff grade.
11. Does not use a strong causal design: there was a change in instrumentation during the study.
12. Sample is not relevant to this review: the parameters for this WWC review specified that students should be in grades 6–9; this study did not disaggregate students in the eligible range from those outside the range.
13. Complete data were not reported: the WWC could not compute effect sizes.
14. Sample is not relevant to the scope of this review: this study does not focus on students in U.S. schools, one of the parameters for this WWC review.