What Works Clearinghouse

Elementary School Math September 14, 2006

Everyday Mathematics

Program description

Everyday Mathematics, published by Wright Group/McGraw-Hill, is a core curriculum for students in kindergarten through grade 6 covering numeration and order, operations, functions and sequences, data and chance, algebra, geometry and spatial sense, measures and measurement, reference frames, and patterns. At each grade level, the *Everyday Mathematics* curriculum provides students with multiple opportunities to learn concepts and practice skills. Across grade levels, concepts are reviewed and extended in varying instructional contexts. The distinguishing features of *Everyday Mathematics* are its focus on real-life problem solving, student communication of mathematical thinking, and appropriate use of technology. This curriculum also emphasizes balancing different types of instruction, using various methods for skills practice, and fostering parent involvement in student learning.

Research

Four studies of *Everyday Mathematics* met the What Works Clearinghouse (WWC) evidence standards with reservations. These studies included a total of approximately 12,600 students in grades 3–5 from a range of socioeconomic backgrounds and attending schools in urban, suburban, and rural communities in multiple states.[1]

Effectiveness

Everyday Mathematics was found to have potentially positive effects on students' mathematics achievement.

	Mathematics achievement
Rating of effectiveness	Potentially positive effects
Improvement index[2]	Average: +12 percentile points Range: –7 to +25 percentile points

1. The evidence in this report is based on available research. Findings and conclusions may change as new research becomes available.

2. These numbers show the average and the range of improvement indices for all findings across the four studies. The range of improvement indices across the four studies was –7 to +25.

Additional program information

Developer and contact

Developed by University of Chicago School Mathematics Project. Published by Wright Group/McGraw-Hill. 220 East Danieldale Road, DeSoto, TX 75115. Web: www.wrightgroup.com. Telephone: 800-648-2970. Fax: 800-593-4418.

Scope of use

Curriculum development for *Everyday Mathematics* began in 1983. The developer reports that the curriculum is used in more than 175,000 classrooms by more than 2.8 million students. A second edition of the curriculum became available in 2001–02.

Teaching

Everyday Mathematics is structured differently for kindergarten than for grades 1–6. The kindergarten *Everyday Mathematics* curriculum is composed primarily of activities such as counting games, money exchanges, and puzzles. In grades 1–6, the curriculum is broken into units covering specific topics. The number of units per school year ranges from 9 to 12, depending on the specific grade and the topics covered. Each unit comprises 7 to 14 individual lessons. The developer offers multiple professional development options, such as user conferences and institutes, onsite professional development programs, and online courses.

Cost

Curriculum sets are bundled by grade and are available for kindergarten through grade 6 (grade 6 is beyond the scope of this report). For kindergarten, the Core Teacher's Resource Package costs $162.78 and includes Program Guide and Masters; Teacher's Guide to Activities; Teacher's Reference Manual (grades K–3); Minute Math; Assessment Handbook; Home Connection Handbook (grades K–6); Number Grid Poster; Content-by-Strand Poster; and Mathematics at Home (books 1–3). For grades 1–5, the Core Teacher's Resource Package costs $233.40 and includes Teacher's Lesson Guides (1 and 2); Teacher's Reference Manual; Assessment Handbook; Home Connection Handbook (grades K–6); Math Masters; Minute Math+; Posters; Content-by-Strand; and one set of Student Materials (student math journals 1 and 2). Supplemental materials and manipulatives are available separately and vary in price.

Research

Sixty-one studies reviewed by the WWC investigated the effects of *Everyday Mathematics.* Four studies (Carroll, 1998; Riordan & Noyce, 2001; Waite, 2000; and Woodward & Baxter, 1997) used quasi-experimental designs that met WWC standards with reservations. The remaining fifty-seven studies did not meet WWC evidence screens.

The Carroll (1998) study included 76 fifth-grade students in four classrooms from four school districts using *Everyday Mathematics* and a comparison group of 91 fifth-grade students in four classrooms from similar districts, matched on student demographics and geographical location. The intervention group had used *Everyday Mathematics* since kindergarten. The comparison group had used traditional basal mathematics texts at all previous grades.

The Riordan and Noyce (2001) study included 3,781 fourth-grade students in 67 schools in Massachusetts using *Everyday Mathematics* and a comparison group of 5,102 fourth-grade students in 78 similar schools, matched on baseline mathematics achievement scores and student demographics. Forty-eight schools in the intervention group had implemented *Everyday Mathematics* for four or more years (early implementers), and 19 schools had implemented *Everyday Mathematics* for two or three years (later implementers). The comparison group used 15 different textbook programs representing the instructional norm in Massachusetts, with the most commonly used programs being those published by Addison-Wesley, Houghton-Mifflin, and Scott-Foresman.

The Waite (2000) study included 732 third-, fourth-, and fifth-grade students in six schools using *Everyday Mathematics* and a comparison group of 2,704 third-, fourth-, and fifth-grade students in 12 similar schools, matched on baseline math achievement scores, student demographics, and geographical location. The schools in the intervention group were in their first year of

Research *(continued)*

implementing *Everyday Mathematics.* The comparison group used a more traditional mathematics curriculum approved by the school district.

The Woodward and Baxter (1997) study included 104 third-grade students in five classrooms in two schools using *Everyday Mathematics* and a comparison group of 101 third-grade students in four classrooms in one similar school, matched on student demographics and geographical location. The comparison group used the *Heath Mathematics* curriculum, a more traditional mathematics program.

Effectiveness

Findings

The WWC review of elementary school mathematics curriculum-based interventions addresses student outcomes in mathematics achievement.

The Carroll (1998) study reported a statistically significant positive effect of Everyday Mathematics on geometric knowledge. After accounting for pretest differences between Everyday Mathematics students and comparison students, the WWC determined that this finding was substantively important but not statistically significant. Based on this study finding, the WWC categorized the effect of Everyday Mathematics on geometric knowledge as being a substantively important positive effect.[3]

The Riordan and Noyce (2001) study reported a statistically significant positive effect of *Everyday Mathematics* on overall math achievement. Using school-level data provided by the authors, the WWC determined that this finding was statistically significant and substantively important for the 48 early-implementing schools. For the 19 later-implementing schools, however, the WWC determined the finding to be substantively important but not statistically significant. Based on this study finding, the WWC categorized *Everyday Mathematics* as having a statistically significant positive effect on overall math achievement for the 48 early-implementing schools and a substantively important positive effect for the 19 later-implementing schools.

The Waite (2001) study reported a statistically significant positive effect of *Everyday Mathematics* on overall math achievement. After accounting for the misalignment between the school as the unit of assignment and the student as the unit of analysis, the WWC determined that this finding was substantively important but not statistically significant. Based on this study finding, the WWC categorized the effect of *Everyday Mathematics* on overall math achievement as being a substantively important positive effect. The Waite study reported subtest results (concepts, operations, and problem solving). After WWC calculations, these results were found to be positive but not statistically significant. The subtest analyses do not factor into the rating.

The Woodward and Baxter (1997) study reported no significant effect of *Everyday Mathematics* on overall math achievement. After accounting for pretest differences between *Everyday Mathematics* students and comparison students, the WWC confirmed this finding. Based on this study finding, the WWC categorized the effect of *Everyday Mathematics* on overall math achievement as indeterminate. The study also reported subtest results (computation, concepts, and problem solving) and found a statistically significant positive effect on the concepts subtest. WWC calculations revealed a substantively important, but not statistically significant, positive effect for the concepts subtest and a substantively important, but not statistically significant, negative effect for the computations subtest. The subtest analyses do not factor into the rating.

Four studies examined outcomes in mathematics achievement: One study (Riordan & Noyce, 2001, 48 early-implementing schools) found statistically significant and positive effects. Three studies (Riordan & Noyce, 2001, 19 later-implementing schools;

3. The level of statistical significance was calculated by the WWC and corrects for clustering within classrooms or schools and for multiple comparisons. For an explanation see the WWC Tutorial on Mismatch. See the WWC Intervention Rating Scheme for the formulas the WWC used to calculate statistical significance. In the case of the *Everyday Mathematics* report, a correction for clustering was needed.

Effectiveness *(continued)*

Carroll, 1998; Waite, 2001) found positive effects. And one study (Woodward & Baxter, 1997) found indeterminate effects.

Rating of effectiveness

The WWC rates interventions 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 (as calculated by the WWC), the size of the differences between participants in the intervention condition and the comparison condition, and the consistency of the findings across studies (see the WWC Intervention Rating Scheme). The WWC found Everyday Mathematics to have potentially positive effects on mathematics achievement.

The WWC found *Everyday Mathematics* to have potentially positive effects on mathematics achievement

Improvement index

For the math achievement outcomes, the WWC computed an improvement index based on the effect size (see the WWC Improvement Index Technical Paper). The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. Unlike the rating of effectiveness, the improvement index is entirely based on the size of the effect, regardless of the statistical significance of the effect, the study design, or the analysis. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results. The average improvement index for mathematics achievement is +12, with a range of –7 to +25.

Summary

The WWC reviewed 62 studies on *Everyday Mathematics.* Four studies met WWC evidence standards with reservations. These four studies found potentially positive effects on mathematics achievement. The remaining studies did not meet WWC evidence standards.

References

Met WWC evidence standards with reservations

Carroll, W. M. (1998). Geometric knowledge of middle school students in a reform-based mathematics curriculum. *School Science and Mathematics, 98*(4), 188–197.

Additional source:

Carroll, W. M., & Isaacs, A. (2003). Achievement of students using the University of Chicago School Mathematics Project's Everyday Mathematics. In S. L. Senk & D. R. Thompson (Eds.), *Standards-based school mathematics curriculum: Where are they? What do students learn?* (pp. 79–108). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. (Study: Geometric knowledge of fifth- and sixth-grade students.)

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.

Waite, R. D. (2000). A study of the effects of Everyday Mathematics on student achievement of third-, fourth-, and fifth-grade students in a large north Texas urban school district. *Dissertation Abstracts International, 61*(10), 3933A. (UMI No. 9992659).

Woodward, J., & Baxter, J. (1997). The effects of an innovative approach to mathematics on academically low-achieving students in inclusive settings. *Exceptional Children, 63*(3), 373–388.

Did not meet WWC evidence screens

ARC Center. (2000a). Everyday Mathematics: Glendale, CA. In *The ARC Center's implementation stories from the field*. Retrieved November 2, 2005 from www.comap.com/elementary/projects/arc//stories/glendaleprint.htm.[4]

ARC Center. (2000b). Everyday Mathematics: Kent, WA. In *The ARC Center's implementation stories from the field*. Retrieved November 2, 2005 from www.comap.com/elementary/projects/arc//stories/kentprint.htm.[4]

4. Does not use strong causal design: this is a qualitative study.

References *(continued)*

ARC Center. (2000c). Everyday Mathematics: Portage, WI. In *The ARC Center's implementation stories from the field*. Retrieved November 2, 2005 from www.comap.com/elementary/projects/arc//stories/portageprint.htm.[5]

ARC Center. (2003). *The ARC Center tri-state student achievement study: Executive summary*. Retrieved November 2, 2005 from www.comap.com/elementary/projects/arc/The%20ARC%20Center%20Tri-State%20Student%20Achievement%20Study.pdf.[6]

Baxter, J., Woodward, J., & Olson, D. (2001). Effects of reform-based mathematics instruction on low achievers in five third-grade classrooms. *The Elementary School Journal, 101*(5), 529–547.[5]

Briars, D. J. (2004, July). *The Pittsburgh story: Successes and challenges in implementing standards-based mathematics programs*. Paper presented at the Everyday Math Users' Conference.[6]

Briars, D. J., & Resnick, L. B. (2000). *Standards, assessments—and what else? The essential elements of standards-based school improvement* (CSE Technical Report 528). Los Angeles: University of California, Los Angeles, Center for the Study of Evaluation, National Center for Research on Evaluation, Standards, and Student testing, & Graduate School of Education & Information Studies. Retrieved November 2, 2005 from www.cse.ucla.edu/CRESST/Reports/TECH528.pdf.[7]

Carroll, W. M. (1993). *Mathematical knowledge of kindergarten and first-grade students in Everyday Mathematics*. Chicago: University of Chicago School Mathematics Project.[6]

Carroll, W. M. (1995a). *Report on the field test of Fifth Grade Everyday Mathematics.* Chicago: University of Chicago School Mathematics Project, Elementary Component.[8]

Carroll, W. M. (1995b). *Third grade Everyday Mathematics students' performance on the 1993 and 1994 Illinois state mathematics test*. Chicago: University of Chicago School Mathematics Project.[6]

Additional source:

Carroll, W. M., & Isaacs, A. (2003). Achievement of students using the University of Chicago School Mathematics Project's Everyday Mathematics. In S. L. Senk & D. R. Thompson (Eds.), *Standards-based school mathematics curriculum: Where are they? What do students learn?* (pp. 79–108). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. (Study: Third-grade Illinois state test.)

Carroll, W. M. (1996a). *A follow-up to the fifth-grade field test of Everyday Mathematics: Geometry, and mental and written computation.* Chicago: University of Chicago School Mathematics Project.[6]

Carroll, W. M. (1996b). Mental computation of students in a reform-based mathematics curriculum. *School Science and Mathematics, 96*(6), 305–311.[6]

Carroll, W. M. (1996c). Use of invented algorithms by second graders in a reform mathematics curriculum. *Journal of Mathematical Behavior, 15*(2), 137–150.[5]

Carroll, W. M. (1997). Results of third-grade students in a reform curriculum on the Illinois state mathematics test. *Journal for Research in Mathematics Education, 28*(2), 237-242.[6]

Carroll, W. M. (2000). Invented computational procedures of students in a standards-based curriculum. *Journal of Mathematical Behavior, 18*(2), 111–121.[10]

Carroll, W. M. (2001a). *A longitudinal study of children in the Everyday Mathematics curriculum*. (Available from University of Chicago School Mathematics Project, http://social-sciences.uchicago.edu/ucsmp/EvalRep.pdf)[7]

5. Does not use strong causal design: this is a qualitative study.
6. Does not use a strong causal design: the study, which used a quasi-experimental design, did not establish that the comparison group was equivalent to the treatment group at the baseline.
7. Does not use a strong causal design: the study did not use a comparison group.
8. Intervention not relevant: this study evaluated a field test version of the curriculum, not the final version.

References *(continued)*

Additional sources:

Carroll, W. M., & Fuson, K. C. (1999). *Achievement results for fourth graders using the standards-based curriculum Everyday Mathematics*. Unpublished manuscript.

Carroll, W. M., & Fuson, K. C. (n.d.) *Performance of U.S. fifth graders in a reform-math curriculum compared to Japanese, Chinese, and traditionally-taught U.S. students*. Unpublished manuscript.

Carroll, W. M., Fuson, K. C., & Drueck, J. D. (n.d.) *A longitudinal study of second and third graders using the reform curriculum Everyday Mathematics by the University of Chicago School Mathematics Project*. Unpublished manuscript.

Carroll, W. M. (2001b). Students in a standards-based mathematics curriculum: Performance on the 1999 Illinois State Achievement Test. *Illinois Mathematics Teacher, 52*(1), 3–7.[10]

Carroll, W. M., Fuson, K. C., & Diamond, A. (2000). Use of student-constructed number stories in a reform-based curriculum. *Journal of Mathematical Behavior, 19*(1), 49–62.[9]

Carroll, W. M., & Isaacs, A. (2003a). Achievement of students using the University of Chicago School Mathematics Project's Everyday Mathematics. In S. L. Senk & D. R. Thompson (Eds.), *Standards-based school mathematics curriculum: Where are they? What do students learn?* (pp. 79–108). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. (Study: Mental computation and number sense of fifth graders.)[10]

Carroll, W. M., & Isaacs, A. (2003b). Achievement of students using the University of Chicago School Mathematics Project's Everyday Mathematics. In S. L. Senk & D. R. Thompson (Eds.), *Standards-based school mathematics curriculum: Where are they? What do students learn?* (pp. 79–108). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. (Study: Multidigit computation in third grade.)[10]

Carroll, W. M., & Isaacs, A. (2003c). Achievement of students using the University of Chicago School Mathematics Project's Everyday Mathematics. In S. L. Senk & D. R. Thompson (Eds.), *Standards-based school mathematics curriculum: Where are they? What do students learn?* (pp. 79–108). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. (Study: School district studies: HVRSD.)[10]

Carroll, W. M., & Porter, D. (1994). *A field test of Fourth Grade Everyday Mathematics: Summary report.* Chicago: University of Chicago School Mathematics Project, Elementary Component.[10]

Drueck, J. V. (1996, April). *Progression of multidigit addition and subtraction solution methods in high-, average-, and low-math-achieving second graders experiencing a reform curriculum.* Paper presented at the meeting of the American Educational Research Association, New York.[11]

Drueck, J. V., Fuson, K. C., Carroll, W. M., & Bell, M. S. (1995, April). *Performance of U.S. first graders in a reform math curriculum compared to Japanese, Chinese and traditionally taught U.S. students.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco.[10]

Everyday Learning Corporation. (1996a). *Everyday Mathematics student achievement studies*. Chicago: Author. (Study: Greensburg Salem and Everyday Mathematics.)[10]

Everyday Learning Corporation. (1996b). *Everyday Mathematics student achievement studies*. Chicago: Author. (Study: Illinois Goals Assessment Program performance.)[10]

9. Does not use strong causal design: this is a qualitative study.
10. Does not use a strong causal design: the study, which used a quasi-experimental design, did not establish that the comparison group was equivalent to the treatment group at the baseline.
11. Does not use a strong causal design: the study did not use a comparison group.

References *(continued)*

Everyday Learning Corporation. (1996c). *Everyday Mathematics student achievement studies*. Chicago: Author. (Study: Kalamazoo success story.)[14]

Everyday Learning Corporation. (1996d). *Everyday Mathematics student achievement studies*. Chicago: Author. (Study: Northwestern University analysis of students.)[13]

Everyday Learning Corporation. (1996e). *Everyday Mathematics student achievement studies*. Chicago: Author. (Study: UCSMP fourth grade field test.)[13]

Everyday Learning Corporation. (1996f). *Everyday Mathematics student achievement studies*. Chicago: Author. (Study: UCSMP in Wheeling, Illinois.)[12]

Fuson, K. C., & Carroll, W. M. (n.d.). *Summary of comparison of Everyday Math (EM) and McMillan (MC): Evanston student performance on whole-class tests in grades 1, 2, 3, and 4.* Unpublished manuscript.[13]

Additional sources:

Carroll, W. M., & Fuson, K. C. (1998). *A comparison of Everyday Math (EM) and McMillan (MC) on Evanston student performance on whole-class tests: Recommendations for revision of Everyday Mathematics Grades 1, 2, 3, and 4*. (Available from Karen C. Fuson, School of Education and Social Policy, Northwestern University, 2115 N. Campus Drive, Evanston, IL 60208-2610.)

Fuson, K. C., Carroll, W. M., & Drueck, J. V. (2000). Achievement results for second and third graders using the standards-based curriculum Everyday Mathematics. *Journal for Research in Mathematics Education*, 31(3), 277–295.[13]

Hedges, L. V., Stodolsky, S. S., & Mathison, S. (1987). *A formative evaluation of Kindergarten Everyday Mathematics* (Evaluation report #86/87-KEM-1). Chicago: University of Chicago School Mathematics Project.[12]

Mathematics Evaluation Committee of the Hopewell Valley Regional School District. (1997). *Mathematics evaluation report: Year two*. Pennington, NJ: Hopewell Valley Regional School District.[13]

McCabe, K. J. (2001). Mathematics in our schools: An effort to improve mathematics literacy. *Masters Abstracts International, 40*(04), 835. (UMI No. 1407560)[13]

Murphy, L. A. (1998). Learning and affective issues among higher- and lower-achieving third-graders in math reform classrooms: Perspectives of children, parents, and teachers. *Dissertation Abstracts International, 59*(12), 4358. (UMI No. 9913852)[14]

Northwestern University Longitudinal Study of Everyday Mathematics. (1998). *Fourth-grade feedback on specific lessons*. Unpublished report.[12]

Sconiers, S., Isaacs, A., Higgins, T., McBride, J., & Kelso, C. R. (2003). *The ARC center tri-state student achievement study*. Lexington, MA: The Consortium for Mathematics and Its Applications.[15]

Additional sources:

SRA/McGraw-Hill. (2001). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Illinois, Massachusetts, and Washington achievement study.)

SRA/McGraw-Hill. (2001a). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: California SAT-9.)[13]

SRA/McGraw-Hill. (2001b). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: Florida Comprehensive Assessment Test.)[13]

12. Does not use strong causal design: this is a qualitative study.
13. Does not use a strong causal design: the study, which used a quasi-experimental design, did not establish that the comparison group was equivalent to the treatment group at the baseline.
14. Does not use a strong causal design: the study did not use a comparison group.
15. Does not use a strong causal design: the study, which used a quasi-experimental design, did not establish that the comparison group was equivalent to the treatment group at the baseline in a pretest measure of math achievement.

References *(continued)*

SRA/McGraw-Hill. (2001c). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: Illinois Standards Achievement Test.)[19]

SRA/McGraw-Hill. (2001d). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: Kentucky Commonwealth Accountability Testing System.)[17]

SRA/McGraw-Hill. (2001e). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: Massachusetts Comprehensive Assessment System.)[17]

SRA/McGraw-Hill. (2001f). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: MAT-7 in Wichita, Kansas.)[17]

SRA/McGraw-Hill. (2001g). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: Michigan Educational Assessment Program.)[18]

SRA/McGraw-Hill. (2001h). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: Pennsylvania State Assessment System.)[19]

SRA/McGraw-Hill. (2001i). *Everyday Mathematics student achievement studies: Volume 3*. Chicago: Author. (Study: SAT-9 in Santa Ana, California.)[17]

SRA/McGraw-Hill. (2001j). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Florida Comprehensive Assessment Test.)[17]

SRA/McGraw-Hill. (2001k). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Illinois Standards Achievement Test.)[17]

SRA/McGraw-Hill. (2001l). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Kentucky Core Content Test.)[17]

SRA/McGraw-Hill. (2001m). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Michigan Educational Assessment Program.)[17]

SRA/McGraw-Hill. (2001n). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: North Carolina ABCs Accountability Model.)[18]

SRA/McGraw-Hill. (2001o). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: South Carolina Palmetto Achievement Challenge Test.)[18]

SRA/McGraw-Hill. (2001p). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Stanford-9 in Tucson, Arizona.)[16]

SRA/McGraw-Hill. (2001q). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Tennessee Comprehensive Assessment Program.)[18]

SRA/McGraw-Hill. (2001r). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Texas Assessment of Academic Skills.)[18]

SRA/McGraw-Hill. (2001s). *Everyday Mathematics student achievement studies: Volume 4*. Chicago: Author. (Study: Washington Assessment of Student Learning.)[17]

For more information about specific studies and WWC calculations, please see the WWC Everyday Mathematics Technical Appendices.

16. Does not use strong causal design: this is a qualitative study.
17. Does not use a strong causal design: the study, which used a quasi-experimental design, did not establish that the comparison group was equivalent to the treatment group at the baseline.
18. Does not use a strong causal design: the study did not use a comparison group.
19. Does not use a strong causal design: the study, which used a quasi-experimental design, did not establish that the comparison group was equivalent to the treatment group at the baseline in a pretest measure of math achievement.

Appendix

Appendix A1.1 Study characteristics: Carroll, 1998 (quasi-experimental design)

Characteristic	Description
Study citation	Carroll, W. M. (1998). Geometric knowledge of middle school students in a reform-based mathematics curriculum. *School Science and Mathematics,* 98(4), 188–197.
Participants	The participants in this study were fifth graders. The study also included sixth graders, but that grade level is not within the scope of this review. Four classes of fifth graders from four districts that had been using *Everyday Mathematics* since kindergarten were selected as the intervention group, and four classes of fifth graders from similar districts that had been using basal mathematics texts were selected as the comparison group. All classes included students of mixed ability. Only students who took both the pretest and posttest were included in the analyses. The final sample consisted of 76 students in the intervention group and 91 students in the comparison group.
Setting	The study author indicates that the participating school districts ranged from urban to rural to suburban and included students from a wide range of social and ethnic backgrounds.
Intervention	All students that participated had been using the *Everyday Mathematics* curriculum since kindergarten, so the districts had been implementing *Everyday Mathematics* for at least five years.
Comparison	The author describes the comparison group as students that had used more traditional basal mathematics texts at all previous grade levels.
Primary outcomes and measurement	Researcher-developed assessment of geometric knowledge consisting of 21 questions based on the van Hiele model of five levels of geometric understanding. (See Appendix A2 for more detailed descriptions of outcome measures.)
Teacher training	Teachers were provided with instructions for administering the test. No teacher training in the use of the curriculum was reported.

Appendix A1.2 Study characteristics: Riordan & Noyce, 2001 (quasi-experimental design)

Characteristic	Description
Study citation	Riordan, J., & Noyce, P. (2001). The impact of two standards-based mathematics curricula on student achievement in Massachusetts. *Journal for Research in Mathematics Education,* 32(4), 368–398.
Participants	The participants in this study were fourth-graders. A total of 67 schools were identified as using *Everyday Mathematics.* Seventy-eight comparison schools were matched on baseline mean school performance on the previous statewide mathematics test, percentage of students receiving free or reduced lunch, ethnicity, and percentage of students who had limited English language proficiency and required special education services. The final sample consisted of 3,781 students in the intervention group and 5,012 students in the comparison group.
Setting	All schools were located in Massachusetts. Overall, schools in this study had a higher percentage of white students (around 90%) and a lower percentage of students eligible for free or reduced lunch (around 10%) when compared with the state average. Also, intervention and comparison schools had performed above the state mean on statewide achievement tests.

Appendix A1.2 Study characteristics: Riordan & Noyce, 2001 (quasi-experimental design) *(continued)*

Characteristic	Description
Intervention	The 67 schools in the intervention group had implemented *Everyday Mathematics* for at least two years by 1999. Forty-eight schools in the intervention group had implemented *Everyday Mathematics* for four or more years (early implementers) and 19 schools had implemented the curriculum for two or three years (later implementers).
Comparison	The 78 matched comparison schools used 15 different textbook programs that, in aggregate, represented the instructional norm in Massachusetts. The most commonly used programs were published by Addison-Wesley, Houghton-Mifflin, and Scott Foresman.
Primary outcomes and measurement	Massachusetts Comprehensive Assessment System, a criterion-referenced state test that includes both multiple-choice and open-response questions. (See Appendix A2 for more detailed descriptions of outcome measures.)
Teacher training	None reported.

Appendix A1.3 Study characteristics: Waite, 2000 (quasi-experimental design)

Characteristic	Description
Study citation	Waite, R. (2000). A study of the effects of *Everyday Mathematics* on student achievement of third-, fourth-, and fifth- grade students in a large North Texas Urban School District. Unpublished doctoral dissertation, University of North Texas, Denton.
Participants	The participants were third-, fourth-, and fifth-grade students. Six schools that were in their first year of implementing *Everyday Mathematics* volunteered to participate in this study, and a comparison group of 12 schools in the same school district were selected and matched on previous mathematics scores, socioeconomic status, and ethnicity. The final sample consisted of 732 students in the intervention group and 2,704 students in the comparison group.
Setting	All the schools in this study were located in a large urban school district in north Texas.
Intervention	The intervention group consisted of six schools that were part of a pilot program and volunteered to participate in this study. The intervention schools were in their first year of implementing *Everyday Mathematics* in the 1998–1999 school year.
Comparison	Based on a profile of the intervention group, a comparison group of 12 schools in the same district that were similar in socioeconomic status, grade level, ethnic diversity, and previous year's Iowa Test of Basic Skills mathematics score were selected. The comparison group used a more traditional mathematics curriculum approved by the school district.
Primary outcomes and measurement	1999 Texas Assessment of Academic Skills mathematics scores. (See Appendix A2 for more detailed descriptions of outcome measures.)
Teacher training	Teachers in the intervention schools received 40 hours of training for the use of the *Everyday Mathematics* curriculum and also received the "Teacher's Resource Package."

Appendix A1.4 Study characteristics: Woodward & Baxter, 1997 (quasi-experimental design)

Characteristic	Description
Study citation	Woodward, J., & Baxter, J. (1997). The effects of an innovative approach to mathematics on academically low achieving students in inclusive settings. *Exceptional Children,* 63(3), 373–388.
Participants	The participants in this study were third graders. Five classes of third graders in two schools that had been using *Everyday Mathematics* were selected as the intervention group, and four classes of third graders in one similar school, matched on student demographics and geographical location, were selected as the comparison group. All classes included students of mixed ability. The final sample consisted of 104 students in the intervention group and 101 students in the comparison group.
Setting	The three schools were located in the Pacific Northwest of the United States. They were all middle-class, suburban elementary schools and had very low percentages of students on free or reduced lunch.
Intervention	The intervention group consisted of five classes in two schools that were using *Everyday Mathematics.* They were in the third year of implementing the *Everyday Mathematics* curriculum. The intervention group consisted of 16 low-ability students, 27 average-ability students, and 61 high-ability students.
Comparison	The comparison group was selected from one school that used Heath Mathematics as their core curriculum, a more traditional approach focusing on computational skills. The comparison group consisted of 22 low-ability students, 42 average-ability students, and 37 high-ability students.
Primary outcomes and measurement	1994 Iowa Test of Basic Skills.[1] (See Appendix A2 for more detailed descriptions of outcome measures.)
Teacher training	None reported

1. The study also reported outcomes on an Informal Math Assessment that assessed problem solving, not overall mathematics achievement. Since this measure was administered to a small subsample of students and was scored subjectively according to a 5-point rubric, it did not meet WWC standards and, therefore, was not included in this report.

Appendix A2 Outcome measures in the mathematics achievement domain

Outcome measure	Description
Iowa Test of Basic Skills (ITBS)	Woodward & Baxter (1997) used one standardized measure of mathematics achievement study. The third (Form G) of the Iowa Test of Basic Skills (ITBS) was used as both a pretest and posttest. This norm-referenced test has well documented reliability and validity.
Massachusetts Comprehensive Assessment System (MCAS)	As cited in Riordan & Noyce (2001), the Massachusetts Comprehensive Assessment System is administered annually and covers four strands of mathematics: number sense; patterns, relations, and functions; geometry and measurement; and statistics and probability. Each strand contributes at least 20% of total points and is tested with open-response, short-answer, and multiple-choice items. Raw scores are converted from scaled scores that range from 200–280. Reliability is estimated at 0.87 for grade 4.
Researcher-developed assessment of geometric knowledge	As cited in Carroll (1998), the van Hiele model for geometric understanding was used as a framework for constructing the pretest and posttest assessments. The pretest and posttest consisted of 21 questions, seven from each of the first three van Hiele levels of geometric reasoning. The authors indicated that the pretest was piloted on a smaller group of students the previous year and that it was reviewed by three mathematics researchers outside of the project. This outcome measure was determined to have face validity.
1999 Texas Assessment of Academic Skills	As cited in Waite (2000), the 1999 Texas Assessment of Academic Skills was a criterion-referenced assessment, developed by the Texas Education Agency (TEA) from the state-mandated curriculum to assess higher order thinking and problem-solving skills across all public schools in Texas. TEA reports an internal consistency reliability range of 0.88 to 0.92 for the assessment. Only the mathematics score from this assessment was used in this study.

Appendix A3 Summary of study findings included in the rating for the mathematics achievement domain[1]

Outcome measure	Study sample	Sample size (students/ schools)	Author's findings from the study: Mean outcome (standard deviation[2]): *Everyday Mathematics* group (column 1)	Author's findings from the study: Mean outcome (standard deviation[2]): Comparison group (column 2)	WWC calculations: Mean difference[3] (column 1– column 2)	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at $\alpha = 0.05$)	WWC calculations: Improvement index[6]
Carroll, 1998 (quasi-experimental design)								
A 21-item researcher developed geometry test	Fifth graders in four schools	167/8	11.9[7] (5.3)	10.2 (4.0)	1.70	0.37	ns	+14
Domain average[8] for mathematics achievement (Carroll, 1998)						0.37	ns	+14
Riordan & Noyce, 2001 (quasi-experimental design)								
MCAS mathematics test 1999	Grade 4 (early implementer schools)	6,009/99	248.27 (7.9)	243.11 (7.2)	5.16	0.69	Statistically significant	+25
Domain average[8] for mathematics achievement (Riordan & Noyce, 2001, early implementers)						0.69	Statistically significant	+25
MCAS mathematics test 1999	Grade 4 (later implementer schools)	2,784/46	241.57 (8.1)	238.59 (6.2)	2.98	0.42	ns	+16
Domain average[8] for mathematics achievement (Riordan & Noyce, 2001, later implementers)						0.42	ns	+16
Waite, 2000 (quasi-experimental design)								
Texas Assessment of Academic Skills mathematics test	Grades 3, 4, and 5	3,346/18	78.82 (11.5)	74.93 (14.8)	3.89	0.27	ns	+11
Domain average[8] for mathematics achievement (Waite, 2000)						0.27	ns	+11

ns = not statistically significant

(continued)

1. This appendix reports findings considered for the effectiveness rating and the improvement index. Subtest findings from the same studies are not included in these ratings, but are reported in Appendix A4.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of the effect size calculation, please see the WWC Technical Working Paper on Effect Size.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between groups. The level of statistical significance was calculated by the WWC and corrects for clustering within classrooms or schools and for multiple comparisons. For an explanation see the WWC Tutorial on Mismatch. See the WWC Intervention Rating Scheme for the formulas the WWC used to calculate statistical significance.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results.
7. The WWC reports different means than the study authors because the WWC took into account the pretest difference between the study groups. In this table, the *Everyday Mathematics* group mean equals the comparison group mean plus the mean difference.
8. The WWC-computed domain average is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A3 Summary of study findings included in the rating for the mathematics achievement domain[1] *(continued)*

Outcome measure	Study sample	Sample size (students/ schools)	Author's findings from the study: Mean outcome (standard deviation[2]): *Everyday Mathematics* group (column 1)	Author's findings from the study: Mean outcome (standard deviation[2]): Comparison group (column 2)	WWC calculations: Mean difference[3] (column 1– column 2)	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at α = 0.05)	WWC calculations: Improvement index[6]
Woodward & Baxter, 1997 (quasi-experimental design)								
Iowa Test of Basic Skills mathematics test	Grade 3	205/3	59.47[7] (11.9)	61.48 (11.4)	–2.01	–0.17	ns	–7
Domain average[8] for mathematics achievement (Woodward & Baxter, 1997)						–0.17	ns	–7
Domain average[8] for mathematics achievement (all studies)						0.32		+12

ns = not statistically significant

1. This appendix reports findings considered for the effectiveness rating and the improvement index. Subtest findings from the same studies are not included in these ratings, but are reported in Appendix A4.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of the effect size calculation, please see the WWC Technical Working Paper on Effect Size.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between groups. The level of statistical significance was calculated by the WWC and corrects for clustering within classrooms or schools and for multiple comparisons. For an explanation see the WWC Tutorial on Mismatch. See the WWC Intervention Rating Scheme for the formulas the WWC used to calculate statistical significance. In the case of the *Everyday Mathematics* report, a correction for clustering was needed.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results.
7. The WWC reports different means than the study authors because the WWC took into account the pretest difference between the study groups. In this table, the Everyday Mathematics group mean equals the comparison group mean plus the mean difference.
8. The WWC-computed domain average is a simple average rounded to two decimal places. The domain improvement index is calculated from the average effect size.

Appendix A4 Summary of subtest findings in the mathematics achievement domain[1]

Outcome measure	Study sample	Sample size (students/ schools)	Author's findings from the study: Mean outcome (standard deviation[2]): *Everyday Mathematics* group (column 1)	Author's findings from the study: Mean outcome (standard deviation[2]): Comparison group (column 2)	WWC calculations: Mean difference[3] (column 1– column 2)	WWC calculations: Effect size[4]	WWC calculations: Statistical significance[5] (at $\alpha = 0.05$)	WWC calculations: Improvement index[6]
Waite, 2000 (quasi-experimental design)								
TAAS math: concepts	Grades 3, 4, and 5	3,346/18	17.51 (2.6)	16.75 (3.1)	0.76	0.25	ns	+10
TAAS math: operations	Grades 3, 4, and 5	3,346/18	13.08 (2.9)	12.2 (3.5)	0.88	0.26	ns	+10
TAAS math: problem solving	Grades 3, 4, and 5	3,346/18	9.73 (3.6)	8.63 (3.6)	1.10	0.31	ns	+12
Woodward & Baxter, 1997 (quasi-experimental design)								
ITBS math: computations	Grade 3	205/3	24.10[7] (4.7)	27.02 (4.8)	–2.92	–0.61	ns	–23
ITBS math: concepts	Grade 3	205/3	20.59[7] (4.5)	18.9 (4.4)	1.69	0.38	ns	+15
ITBS math: problem solving	Grade 3	205/3	14.78[7] (4.7)	15.55 (4.2)	–0.77	–0.17	ns	–7

ns = not statistically significant

1. This appendix presents subtest findings from two measures of mathematics achievement. It was determined that the subtests from these mathematics measures met WWC criterion for reliability or validity. The intervention rating was based on total test scores, which are presented in Appendix A3.
2. The standard deviation across all students in each group shows how dispersed the participants' outcomes are: a smaller standard deviation on a given measure would indicate that participants had more similar outcomes.
3. Positive differences and effect sizes favor the intervention group; negative differences and effect sizes favor the comparison group.
4. For an explanation of the effect size calculation, please see the WWC Technical Working Paper on Effect Size.
5. Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The level of statistical significance was calculated by the WWC and corrects for clustering within classrooms or schools and for multiple comparisons. For an explanation see the WWC Tutorial on Mismatch. See the WWC Intervention Rating Scheme for the formulas the WWC used to calculate statistical significance. In the case of the *Everyday Mathematics* report, a correction for clustering was needed.
6. The improvement index represents the difference between the percentile rank of the average student in the intervention condition and that of the average student in the comparison condition. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results.
7. The WWC reports different means than the study authors because the WWC took into account the pretest difference between the study groups. In this table, the *Everyday Mathematics* group mean equals the comparison group mean plus the mean difference.

Appendix A5 Rating for the mathematics achievement domain

The WWC rates an intervention's effects for a given outcome domain as positive, potentially positive, mixed, no discernible effects, potentially negative, or negative.[1]

For the outcome domain of mathematics achievement, the WWC rated *Everyday Mathematics* as having potentially positive effects. It did not meet the criteria for positive effects, because no *Everyday Mathematics* studies met WWC evidence standards for a strong design. The remaining ratings (mixed effects, no discernible effects, potentially negative effects, and negative effects) were not considered, because *Everyday Mathematics* was assigned the highest applicable rating.[2]

Rating received

Potentially positive effects: Evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: At least one study showing a statistically significant or substantively important *positive* effect, thus qualifying as a *positive* effect.

  Met. Three studies showed substantively important positive effects. Further, the WWC analysis found that one of the effects reported in one of the studies was positive and statistically significant.

- Criterion 2: No studies showing a statistically significant *negative* effect. The number of studies showing *indeterminate* effects is not greater than the number showing statistically significant or substantively important *positive* effects.

  Met. The WWC analysis found no statistically negative effect. One study showed an indeterminate effect and three studies showed substantively important positive effects.

Other ratings considered

Positive effects: Strong evidence of a positive effect with no overriding contrary evidence.

- Criterion 1: Two or more studies showing statistically significant *positive* effects, at least one of which met WWC evidence standards for a strong design.

  Not met. The WWC analysis found no studies that met WWC evidence standards for a strong design.

- Criterion 2: No studies showing statistically significant *negative* effects.

  Met. The WWC analysis found no significantly significant negative effects.

1. For rating purposes, the WWC considers the statistical significance of individual outcomes and the domain level effect. The WWC also considers the size of the domain level effect for ratings of potentially positive effects. See the WWC Intervention Rating Scheme for a complete description.

2. The level of statistical significance was calculated by the WWC and corrects for clustering within classrooms or schools and for multiple comparisons. For an explanation see the WWC Tutorial on Mismatch. See the WWC Intervention Rating Scheme for the formulas the WWC used to calculate statistical significance. In the case of the *Everyday Mathematics* report, a correction for clustering was needed.