

What Works Clearinghouse

Brief Study Report

IES



Reviewed Study: 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.

WWC Study Reports are intended to support decision making; neither the What Works Clearinghouse (WWC) nor the U.S. Department of Education endorses any interventions. No single Study Report should be used as a basis for making policy decisions because (1) few studies are designed and implemented flawlessly and (2) all studies are tested on a limited number of participants, using a limited number of outcomes, at a limited number of times, so generalizing from one study to any context is very difficult. To highlight these issues, the WWC Study Reports describe in detail the specifics of each study, focusing primarily on studies that provide the best evidence of effects (randomized controlled trials). Systematic reviews of the evidence will be conducted to summarize the results of the individual studies.

See the WWC [Detailed Study Report \(PDF\)](#) for more information about this study.

Topic: Curriculum-Based Interventions for Increasing K–12 Math Achievement—Middle School



Intervention: Connected Mathematics Project

Research Design: Quasi-Experimental Design with Matching

Study Rating: 

Date Released: March 4, 2005

Summary of Results: Riordan and Noyce (2001) report that schools that used the Connected Mathematics Project (CMP) for two to three years had greater gains in math achievement overall than those in the comparison group. Riordan and Noyce do not report whether this difference was statistically significant. However, *t* tests calculated by the WWC using data provided by Riordan and Noyce indicate that the difference is not statistically significant. In additional analyses, Riordan and Noyce compared performances on four mathematics topics covered by the outcome measure and found that students in the CMP schools scored statistically significantly higher in all of these areas.

 = Meets Evidence Standards  = Meets Evidence Standards with Reservations  = Does Not Meet Evidence Standards

The What Works Clearinghouse (www.whatworks.ed.gov) was established in 2002 by the [U.S. Department of Education's Institute of Education Sciences](#) to provide educators, policymakers, researchers, and the public with a central and trusted source of scientific evidence of what works in education. Please email all questions and comments to info@whatworks.ed.gov. The What Works Clearinghouse is administered by the U.S. Department of Education through a contract to a joint venture of the [American Institutes for Research](#) and the [Campbell Collaboration](#).

What Is This Report About?

In this study, Riordan and Noyce (2001) test whether or not using the Connected Mathematics Project (CMP) increases 8th-grade students' mathematics standardized test scores compared with scores of students in schools using a mix of traditional math curricula. Riordan and Noyce hypothesize that students using the CMP curriculum will perform better on state standardized tests than students using the traditional curriculum.

How Was the Study Conducted?

This study took place in Massachusetts. To identify schools using the CMP curriculum, Riordan and Noyce obtained a list of middle schools using this curriculum from the Center for the Enhancement of Science and Mathematics Education (CESAME). This list was compared to the results from the 1999 Mathematics, Science, and Technology Survey; only schools that appeared on both lists were included in the study. Riordan and Noyce conducted phone interviews to determine whether schools had implemented at least 11 units of CMP in grades 6 through 8 by 1998–99. Schools that did not meet this criteria were excluded from the study. Through this process, 21 schools were picked as the intervention group. One of these schools had implemented the CMP curriculum earlier than the others and

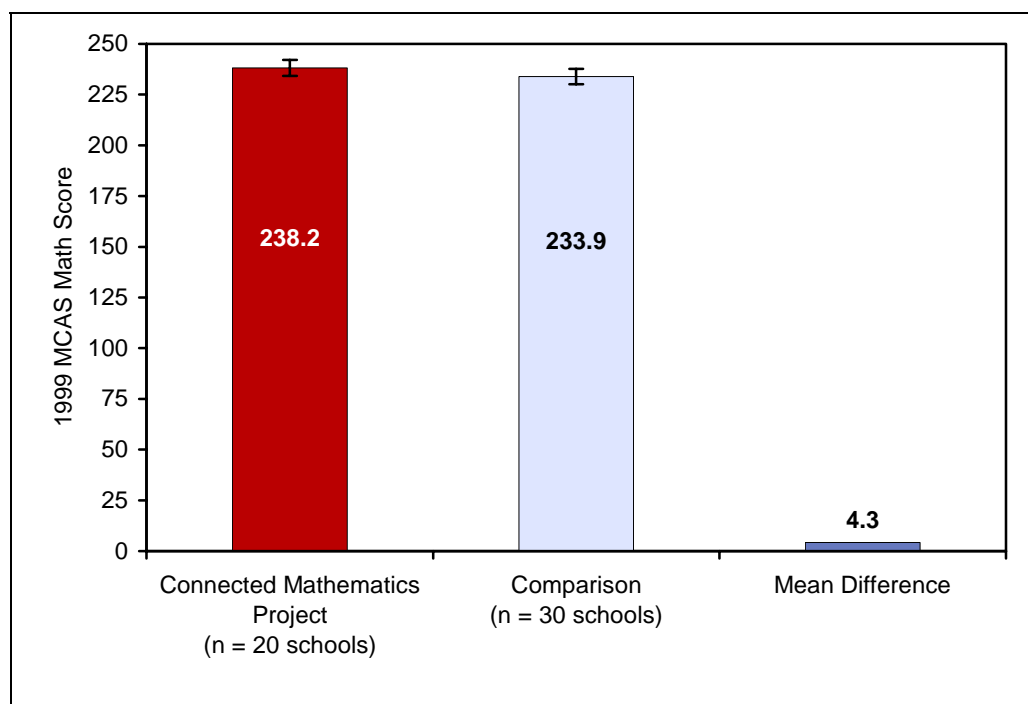
was analyzed separately by Riordan and Noyce. This school is not included in this discussion.

Schools using the CMP curriculum were matched to schools using traditional curricula on the basis of the schools' average Massachusetts Educational Assessment Program (MEAP) scores and the percentage of students receiving free and/or reduced-price lunch. Riordan and Noyce added more schools to the comparison group to adjust for discrepancies in the size of the schools. The textbooks most commonly used by the comparison group were by Heath, Addison-Wesley, Prentice Hall, and Houghton Mifflin.

What Did the Study Find?

Riordan and Noyce report that the schools that had used the CMP curriculum for two to three years had greater gains in math achievement than the schools using the traditional math curricula. However, Riordan and Noyce do not indicate whether this difference was statistically significant. Riordan and Noyce compared performance across four mathematics topics covered by the outcome measure and found that the students in the CMP schools scored significantly higher in all of these areas. Caution must be taken when considering these results because the sample comprises relatively advantaged schools and there may have been variations in the way that the CMP curriculum was implemented across the schools.

Figure 1. Impact Calculated by Riordan and Noyce (2001)^a: Posttest Math Scores



Note. Riordan and Noyce did not report whether the difference between the groups was significant. MCAS = Massachusetts Comprehensive Assessment Program.

^a Confidence intervals were calculated by the WWC.

How Can You Find Out More?

- To learn more about this study, read the [detailed report \(PDF\)](#).
- See reports on [other studies of the Connected Mathematics Project](#).
- See reports on [other studies of Middle School Math curricula](#).
- **Cost information:** not reported.
- **Intervention Developer Contact Information:** Riordan and Noyce do not package, distribute, or provide technical assistance on the CMP curriculum. The CMP curriculum materials are distributed by:

Pearson Prentice Hall, Inc.
1-800-848-9500

www.phschool.com/math/cmp/index.html

Report Production

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Topic area reviewed under: Curriculum-Based Interventions for Increasing K–12 Math Achievement—Middle School

WWC Study Ratings^a: Riordan & Noyce (2001)

Causal Validity: Meets WWC Evidence Standards with Reservations, Quasi-Experimental Design with Matching

Both assignment and matching were performed at the school level. Schools were first matched based on their average scores on the Massachusetts Educational Assessment Program test for the year prior to the introduction of the Connected Mathematics Project (CMP). Schools were also matched on the percentage of students in each school that were eligible for free and reduced-price lunch. Riordan and Noyce do not report any extraneous events that might have confounded the intervention's effects.

Other Study Characteristics	Study Rating	Study-Specific Information
Intervention Fidelity	●	The CMP curriculum is well defined and meets the definition of Middle School Math, but there was evidence that the intervention was not implemented the way it was intended.
Outcome Measures	●●	One math achievement outcome measure was used in this study. There was evidence that this outcome was sufficiently reliable and that it was properly aligned to the intervention.
People, Settings, and Timing	●	Although some important characteristics of the target population were captured in this study, many were not. Riordan and Noyce do not report when the outcome measure was administered.
Testing within Subgroups	●	The effectiveness of the intervention was tested across the sample but not within important subgroups.
Analysis	●	The unit of assignment (school) matched the units of statistical analysis (school). The statistical assumptions necessary for analysis were met. The sample of schools was small, therefore the precision of statistical estimates is limited.
Statistical Reporting	●●	Riordan and Noyce provide the unadjusted means and standard deviations of the achievement posttest. Riordan and Noyce also report sample sizes for each of the groups; therefore, an effect estimate could be calculated.

Note. ●● Fully meets criteria; ● Meets minimum criteria; X Does not meet criteria.

^a For more information on the criteria used to rate this study, see the WWC Evidence Standards: [Middle-School Math](#).