What Works Clearinghouse

Brief Study Report

Reviewed Study: **Peters, K. G. (1992). *Skill performance comparability of two algebra programs on an eighth-grade population.* Unpublished doctoral dissertation, University of Nebraska, Lincoln.**

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:	Saxon Algebra
Research Design:	Randomized Controlled Trial
Study Rating:	
Date Released:	October 28, 2004
Summary of Results:	Peters (1992) reports that students in the intervention and control groups showed gains on the Orleans-Hanna test during the course of the school year (that is, from pretest to posttest). However, the test score gains of the two groups did not differ significantly. There was no evidence that the Saxon Algebra curriculum (intervention) was more or less effective than the University of Chicago Mathematics Project curriculum (control). Sample sizes were not adequate to allow for sufficiently precise estimates of the effect size.

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

What Is This Report About?

Saxon Algebra is a full-year mathematics curriculum designed for 8th- and 9th-grade students. This WWC Study Report reviews a study of the effects of the Saxon Algebra curriculum on 8th-grade student achievements. Students using this curriculum were compared with students using a curriculum from the University of Chicago Mathematics Project (UCMP). This report summarizes the study and reviews its strengths and weaknesses.

How Was the Study Conducted?

Thirty-six 8th-grade students in one school were randomly assigned to two classes. The intervention group was taught using the Saxon Algebra curriculum and the control group was taught using the UCMP curriculum. One teacher was trained on the Saxon Algebra curriculum and on the UCMP curriculum. This teacher taught two classes of students: one using Saxon Algebra curriculum and the other using UCMP curriculum.

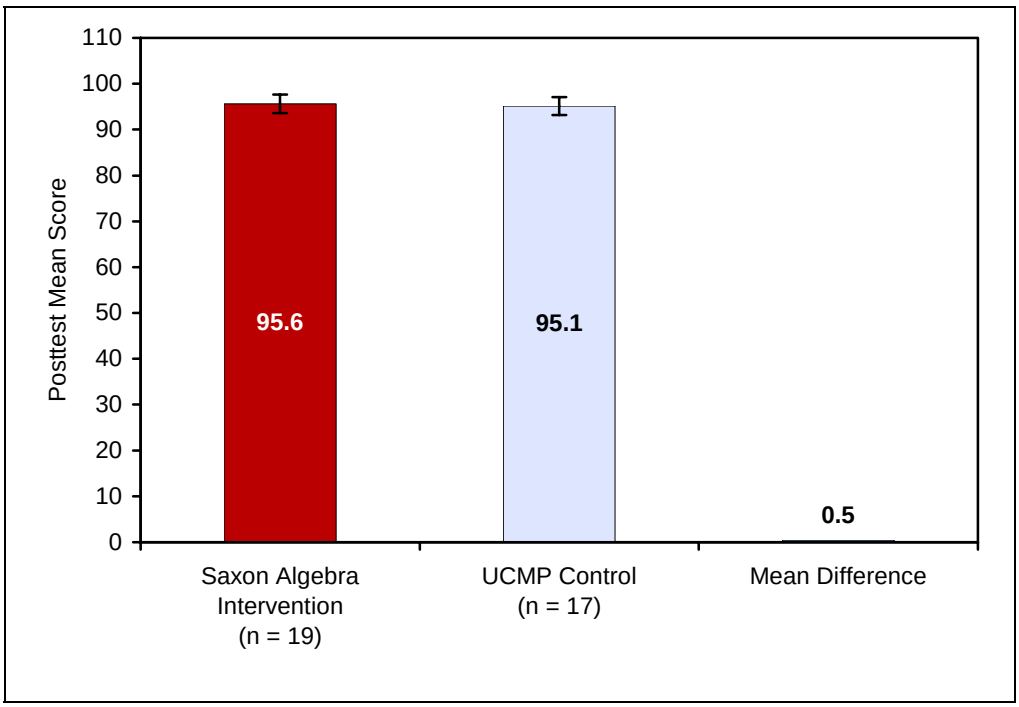
Peters (1992) reports that all students in the study were judged as "algebra ready" on the basis of California Achievement Test scores, prior school grades, and teacher recommendations. The two classes did not differ significantly on the Orleans-Hanna Algebra Prognosis pretest administered at the beginning of the school year.

Two outcome measures of mathematics achievement were used: the Orleans-Hanna Prognosis Test and a set of four researcher-developed unit tests that were specifically aligned to content taught in both curricula. The outcome measure was administered at the end of the school year.

What Did the Study Find?

Although both classes of students showed improvements on their algebra test scores during the course of the year, neither group performed significantly better than the other. Therefore, it was not possible to claim that the Saxon Algebra curriculum had a stronger impact on student achievement than the UCMP curriculum. (See Figure 1.)

Figure 1. Impact Calculated by Peters (2002)[a]: Orleans-Hanna Posttest



Note. Peters reports that the intervention group scores did not differ significantly from the control group scores ($p > .05$). UCMP = University of Chicago Mathematics Project.

[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 Middle School Math curricula.
- **See reports on** other studies of Saxon Algebra curriculum.
- **Cost information:** not reported.
- **Intervention Developer Contact Information:**

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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]: Peters (1992)

Causal Validity: Meets WWC Evidence Standards, a Randomized Controlled Trial with No Randomization, Attrition, or Disruption Problems

Participants were randomly assigned to intervention and control groups. The Orleans-Hanna Algebra Prognosis pretest was administered before the study at the beginning of the school year. Pretest scores did not show any significant differences between the study groups. The random assignment procedure was revised because of student scheduling conflicts, but the magnitude of the revision is unknown. No other extraneous events were identified that appeared to confound the intervention's effects.

Other Study Characteristics	Study Rating	Study-Specific Information
Intervention Fidelity	●●	The Saxon Algebra curriculum is well designed and implemented and meets the definition for Middle School Math. Peters does not provide any evidence of changed expectancies, novelty effects, and disruptions or any information about implementation fidelity.
Outcome Measures	●●	Two outcome measures were used in this study: the Orleans-Hanna Algebra Prognosis Test and researcher-developed unit tests in algebra. The Orleans-Hanna assessment shows evidence of acceptable reliability, and both outcome measures appear to be well aligned with the Saxon Algebra curriculum.
People, Settings, and Timing	●	Although some important characteristics are represented in the sample, many are not. Students were selected from a single school, and the sample of students is part of the identified population. However, Peters documents variation in gender only and does not report variation in the location or academic track of classrooms in the study. The outcome measure was administered at the end of the school year. Peters reports that the study took place between August 1991 and May 1992.
Testing within Subgroups	●	The intervention's effect was tested across the entire sample but not within important subgroups.
Analysis	●	Students were randomly assigned to intervention and control groups, but an unknown number of students changed group assignments because of scheduling conflicts and requests for other classes. In addition, the sample sizes were not adequate to allow for sufficiently precise estimates of the effect size. Peters does not report sufficient statistics for analyzing performances on the researcher-developed algebra tests.
Statistical Reporting	●●	The statistical tests were adequately reported, and effect sizes could be estimated for the outcome measure of interest.

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.