

What Works Clearinghouse



Project SEED

No studies of *Project SEED* that fall within the scope of the Elementary School Math review protocol meet What Works Clearinghouse (WWC) evidence standards. The lack of studies meeting WWC evidence standards means that, at this time, the WWC is unable to draw any conclusions based on research about the effectiveness or ineffectiveness of *Project SEED* on elementary school students. Additional research is needed to determine the effectiveness or ineffectiveness of this intervention.

Program Description¹

Project SEED is a supplemental mathematics program for low-achieving students in grades 3 through 8 and is intended to prepare students to be successful in high school and college math. Based on the Socratic method, instruction is delivered through a series of questions to the class. In addition to individual responses, the instructor solicits group feedback through silent hand signals, chorus responses, and quick surveys of written work. The program is intended to encourage active student learning, develop critical thinking, and strengthen articulation skills. Student learning is assessed regularly, and instructors adapt the lessons to accommodate different ability levels. The curriculum, taught by mathematics specialists, includes topics from advanced mathematics, such as advanced algebra, pre-calculus, group theory, number theory, calculus, and geometry. *Project SEED* instruction is provided in addition to regular math instruction four times a week for 14 to 16 weeks. The program also provides professional development for classroom teachers through modeling, coaching, and workshops.

Research²

The WWC identified 16 studies of *Project SEED* for elementary school students that were published or released between 1988 and 2011.

Eight studies are within the scope of the Elementary School Math review protocol but do not meet WWC evidence standards.

- Five of these studies use a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent prior to the start of the intervention.
- In the remaining three studies, *Project SEED* was offered through learning centers that provided a number of educational interventions in addition to *Project SEED*. Therefore, measures of effectiveness in these studies cannot be attributed solely to *Project SEED*.

Eight studies are out of the scope of the Elementary School Math review protocol because they have an ineligible study design.

- Six of these studies do not include primary analysis of the effectiveness of *Project SEED*.
- One study does not use a comparison group or single-case design.
- One study does not use a sample of elementary school students.

References

Studies that do not meet WWC evidence standards

- Moilanen, C. (1987). *Project SEED in the Portland public schools: Evaluation report 1985–86*. Portland, OR: Portland Public Schools Research and Evaluation Department. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.
- Moilanen, C. (1988). *Project SEED in the Portland public schools. Report on years three and four: 1986–87 and 1987–88. 1987–88 evaluation report*. Portland, OR: Portland Public Schools Research and Evaluation Department. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.
- Webster, W. J. (1992). *The evaluation of Project SEED, 1991–92, Detroit Public Schools*. Detroit, MI: Detroit Public Schools. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.
- Webster, W. J. (1998). *The national evaluation of Project SEED in five school districts 1997–1998*. Dallas, TX: Webster Consulting. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.
- Webster, W. J., & Chadbourn, R. A. (1989). *The longitudinal effects of SEED instruction on mathematics achievement and attitudes: Final report*. Dallas, TX: Dallas Independent School District, Texas Department of Research, Evaluation, and Information Systems. The study does not meet WWC evidence standards because the measures of effectiveness cannot be attributed solely to the intervention—the intervention was combined with another intervention.
- Webster, W. J., & Chadbourn, R. A. (1990). *The evaluation of Project SEED, 1989–90*. Dallas, TX: Dallas Independent School District, Texas Department of Research, Evaluation, and Information Systems. The study does not meet WWC evidence standards because the measures of effectiveness cannot be attributed solely to the intervention—the intervention was combined with another intervention.
- Webster, W. J., & Chadbourn, R. A. (1992). *The evaluation of Project SEED, 1990–91*. Dallas, TX: Dallas Independent School District, Texas Department of Evaluation and Planning Services. The study does not meet WWC evidence standards because the measures of effectiveness cannot be attributed solely to the intervention—the intervention was combined with another intervention.
- Webster, W. J., Dryden, M., Leddick, L., & Green, C. A. (1999). *Evaluation of Project SEED: Detroit Public Schools, 1997–98*. Detroit, MI: Detroit Public Schools. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.

Studies that are ineligible for review using the Elementary School Math Evidence Review Protocol

- Building Engineering and Science Talent. (2004). *What it takes: PreK–12 design principles to broaden participation in science, technology, engineering, and mathematics*. Retrieved from <http://www.bestworkforce.org>. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Clewell, B. C., Anderson, B., & Thorpe, M. E. (1992). *Breaking the barriers: Helping female and minority students succeed in mathematics and science (1st ed.)*. San Francisco: Jossey-Bass. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Fashola, S., Slavin, R., Caldeón, M., & Durán, R. (1997). *Effective programs for Latino students*. Baltimore, MD: Center for Research on the Education of Students Placed At Risk. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

- Mizer, R., Howe, R., & Blosser, P. (1990). *Mathematics: Promising and exemplary programs and materials in elementary and secondary schools*. Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Slavin, R. E. (2005). *Evidence-based reform: Advancing the education of students at risk*. Report prepared for Renewing Our Schools, Securing Our Future: A National Task Force on Public Education (a joint initiative of the Center for American Progress and the Institute for America's Future). Retrieved from <http://www.american-progress.org/>. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Slavin, R. E. (2005). *Show me the evidence: Effective programs for elementary and secondary schools*. Unpublished manuscript. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Slavin, R. E., & Lake, C. (2007). Effective programs in elementary mathematics: A best-evidence synthesis. *The Best Evidence Encyclopedia*, 1(2). Retrieved from http://www.bestevidence.org/word/elem_math_Feb_9_2007.pdf. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Additional source:**
- Slavin, R. E., & Lake, C. (2009). *Effective programs for elementary mathematics: A best evidence synthesis. Educator's summary*. Retrieved from http://www.bestevidence.org/word/elem_math_Mar_11_2009_sum.pdf.
- Webster, W. J., Lee, I., & Jones, M. A. (n.d.). *Evaluation of Project SEED 2009–2010, Compton Unified School District*. Webster Consulting. The study is ineligible for review because it does not use a sample within the age or grade range specified in the protocol.

Endnotes

¹ The descriptive information for this program was obtained from a publicly available source: the program's website (<http://www.projectseed.org>, downloaded September 2011). The WWC requests developers to review the program description sections for accuracy from their perspective. The program description was provided to the developer in September 2011 and we incorporated feedback from the developer. Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review. The literature search reflects documents publicly available by December 2011.

² The studies in this report were reviewed using WWC Evidence Standards, Version 2.1, as described in protocol Version 2.0. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.

Recommended Citation

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Glossary of Terms

Attrition	Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.
Clustering adjustment	If treatment assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.
Confounding factor	A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.
Design	The design of a study is the method by which intervention and comparison groups were assigned.
Domain	A domain is a group of closely related outcomes.
Effect size	The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.
Eligibility	A study is eligible for review and inclusion in this report if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.
Equivalence	A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.
Extent of evidence	An indication of how much evidence supports the findings. The criteria for the extent of evidence levels are given in the WWC Procedures and Standards Handbook (version 2.1).
Improvement index	Along a percentile distribution of students, the improvement index represents the gain or loss of the average student due to the intervention. As the average student starts at the 50th percentile, the measure ranges from -50 to +50.
Multiple comparison adjustment	When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.
Quasi-experimental design (QED)	A quasi-experimental design (QED) is a research design in which subjects are assigned to treatment and comparison groups through a process that is not random.
Randomized controlled trial (RCT)	A randomized controlled trial (RCT) is an experiment in which investigators randomly assign eligible participants into treatment and comparison groups.
Rating of effectiveness	The WWC rates the effects of an intervention in each domain based on the quality of the research design and the magnitude, statistical significance, and consistency in findings. The criteria for the ratings of effectiveness are given in the WWC Procedures and Standards Handbook (version 2.1).
Single-case design	A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.
Standard deviation	The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample tend to be spread out over a large range of values.
Statistical significance	Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < 0.05$).
Substantively important	A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the [WWC Procedures and Standards Handbook \(version 2.1\)](#) for additional details.