Mathematics in Context (MiC)

Effectiveness

No studies of Mathematics in Context that fell within the scope of the Middle School Math review met 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 Mathematics in Context.

Program Description

Mathematics in Context is a middle school mathematics curriculum for grades 5 through 8. Mathematics in Context was developed to align with the 1989 National Council of Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards. It is also based on the Dutch Realistic Mathematics Education approach of first engaging students in understanding real problems and then gradually moving to abstract concepts.

Rather than focusing on one mathematical domain at a time, Mathematics in Context teaches students to explore the relationships among different domains of mathematics (such as algebra and geometry) and to develop strategies for reasoning through problems mathematically. Mathematics in Context also encourages students to collaborate on problem solving.

The WWC identified 27 studies of Mathematics in Context that were published or released between 1983 and 2007.

Five studies are within the scope of the review and have an eligible design, but do not meet WWC evidence standards.

- One study used a quasi-experimental design, but did not meet WWC evidence standards because the measures of effect could not be attributed solely to the intervention - the intervention was combined with another intervention.
- Four studies used quasi-experimental designs, but did not meet WWC evidence standards because the intervention and comparison groups were not shown to be equivalent at baseline.

Twelve studies are outside the scope of the review because they have an ineligible design that does not meet WWC evidence standards, such as having no comparison group.

Ten studies are out of the scope of the review, as defined by the Middle School Math protocol, for reasons other than study design.

- One study was conducted outside the geographic area specified in the protocol.
- Nine studies did not assess students' math achievement or were not studies of the effectiveness of Mathematics in Context.

1The descriptive information for this program was obtained from publicly-available sources: the program’s website (http://128.167.140.34/math/mathincontext/, downloaded August 2008), Romberg and Shafer (2008), and Holt, Rinehart, and Winston (2005). The WWC requests developers to review the program description sections for accuracy from their perspective. Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review.
References

Studies that fall outside the Middle School Math protocol or do not meet evidence standards


Brinker-Kent, L. (2000). Connecting integers to meaningful contexts. Mathematics Teaching in the Middle School, 6(1), 62–66. The study is ineligible for review because it does not examine the effectiveness of an intervention.


Herbel-Eisenmann, B. A., Lubienski, S. T., & Id-Deen, L. (2006). Reconsidering the study of mathematics instructional practices: The importance of curricular context in understanding local and global teacher change. Journal of Mathematics Teacher Education, 9(4), 313-345. The study is ineligible for review because it does not include an outcome within a domain specified in the protocol.


Remillard, J. T. (2005). Examining key concepts in research on teachers’ use of mathematics curricula. Review of Educational Research, 75(2), 211-246. The study is ineligible for review because it does not include a student outcome.

Rickard, A. (2005). Constant Perimeter, Varying Area: A case study of teaching and learning mathematics to design a fish rack. Journal of American Indian Education, 44(3), 80-100. The study is ineligible for review because it does not use a comparison group.


Additional citations for this study:


Shafer, M. C. (2003, April). The impact of Mathematics in Context on student achievement: Preliminary findings. Paper presented at the meeting of the National Council of Teachers of Mathematics, San Antonio, TX. The study does not meet WWC evidence standards because the intervention and comparison groups are not shown to be equivalent at baseline.


Tarr, J.E., Reys, R.E., Reys, B.J., Chavez, O., Shih, J., & Osterlind, S.J. (2008). The Impact of Middle-Grades Mathematics Curricula and the Classroom Learning Environment on Student Achievement. Journal for Research in Mathematics Education, 39(3), 247-280. The study does not meet WWC evidence standards because the measures of effect cannot be attributed solely to the intervention – the intervention was combined with another intervention. Additional citation for this study:


References (continued)

Webb, D. C., Ford, M. J., Burrill, J., Romberg, T. A., Reif, J., & Kwako, J. (2001). NCISLA middle school design collaborative third year student achievement technical report. Madison: University of Wisconsin, National Center for Improving Student Learning and Achievement in Mathematics and Science. The study is ineligible for review because it does not use a comparison group.


