Campbell Collaboration

Plain Language Summary
Education

2021

Targeted school-based interventions improve achievement in reading and maths for at-risk students in Grades K-6

Peer-assisted instruction and small-group instruction by adults showed the largest (short-term) improvements in reading and mathematics.

What is the aim of this review?

This Campbell systematic review examines the effects of targeted school-based interventions on standardised tests in reading and mathematics. The review analyses evidence from 205 studies, 186 of which are randomised controlled trials.

School-based interventions that target students with, or at risk of, academic difficulties in kindergarten to Grade 6 have positive effects on reading and mathematics. The most effective interventions include peer-assisted instruction and small-group instruction by adults. These have substantial potential to decrease the achievement gap.

What is this review about?

Low levels of mathematics and reading skills are associated with a range of negative outcomes in life, including reduced employment and earnings, and poor health. This review examines the impact of a broad range of school-based interventions that specifically target students with or at risk of academic difficulties in Grades K-6. The students in this review either have academic difficulties or are at risk of such difficulties because of their background.

Examples of interventions that are included in this review are: peer-assisted instruction, using financial and non-financial incentives, instruction by adults to small or medium-sized groups of students, monitoring progress, using computer-assisted instruction, and providing coaching to teachers.

Some interventions target specific domains in reading and mathematics such as reading comprehension, fluency, number sense, and operations, while others also focus on building different skills, for example, meta-cognition and social-emotional learning.

The review looks at whether these interventions are effective in improving students' performance on standardised tests of reading and/or mathematics.

What studies are included?

In total, 607 studies are included in this review. However, only 205 of these were of sufficiently high methodological quality to be included in the analysis. Of these, 175 are from the USA, 10 from Sweden, 7 from the UK, 3 from the Netherlands,

How up-to-date is this review?

The review authors searched for studies up to July 2018.

What is the Campbell Collaboration?

Campbell is an international, voluntary, non-profit research network that publishes systematic reviews. We summarise and evaluate the quality of evidence about programmes in the social and behavioural sciences. Our aim is to help people make better choices and better policy decisions.

About this summary

This summary is based on Dietrichson, J., Filges, T., Seerup, J. K., Klokker, R. H., Viinholt, B. C. A., Bøg, M., & Eiberg, M. Targeted school-based interventions for improving reading and mathematics for students with or at risk of academic difficulties in Grades K-6: A systematic review. *Campbell Systematic Reviews*. 2021;e1152. https://doi.org/10.1002/cl2.1152.

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2 from Australia, 2 from Germany, 2 from New Zealand, and 1 each from Canada, Denmark, Ireland, and Israel.

Do targeted school-based interventions improve reading and mathematics outcomes?

Yes. High quality evidence shows that, on average, school-based interventions aimed at students who are experiencing, or at risk of, academic difficulties, do improve reading and mathematics outcomes in the short term.

What type of intervention is the most effective?

Two instructional methods stand out as being particularly and consistently effective. Both peer-assisted instruction and small-group instruction by adults showed the largest (short-term) improvements in reading and mathematics. Other instructional methods showed smaller improvements however, there is substantial variation in the magnitude of these effects.

Are positive effects sustained in the longer term?

Follow-up outcomes measured more than three months after the end of the intervention pertain almost exclusively to studies examining small-group instruction and reading. There is evidence of fadeout but positive effects are still reported up to two years after the end of intervention. Only five studies measured intervention effects after more than two years.

What do the findings of the review mean?

School-based interventions in Grades K-6 can improve reading and mathematics outcomes for students with or at risk of academic difficulties. In particular, the evidence shows that using peer-assisted instruction and small-group instruction are two of the most effective approaches that schools can implement. These interventions make a real difference in the achievement gap for at risk students.

At the same time, we need more research to better understand why interventions work better in some contexts compared to others. We also need to know more about the long-term effects of interventions, and of interventions implemented in other countries than the USA. Furthermore, there are fewer studies of mathematics interventions than reading interventions.