

Targeted school-based interventions improve achievement in reading and maths for at-risk students in Grades 7-12



School-based interventions targeting at-risk students in Grades 7-12 improve performance on standardised tests in reading and maths.

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 maths. The review analyses evidence from 71 studies, 52 of which are randomised controlled trials.

School-based interventions targeting students with, or at risk of, academic difficulties in Grades 7-12 have on average positive effects on standardised tests in reading and maths. The most effective interventions have the potential to considerably decrease the gap between at-risk and not-at-risk students. Effects vary substantially between interventions, however, and the evidence for using certain instructional methods or targeting certain domains is weaker.

What is this review about?

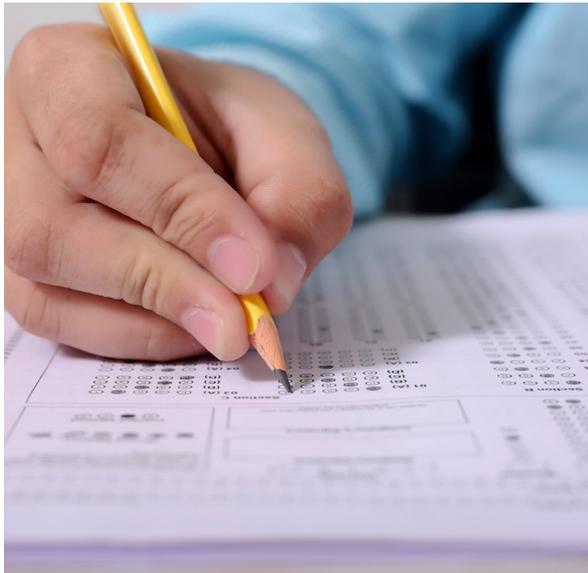
Low levels of literacy and numeracy skills are associated with a range of negative outcomes later in life, such as reduced employment, earnings and health. This review examines the effects of a broad range of school-based interventions targeting students with, or at risk of, academic difficulties on standardised tests in reading and maths. Included interventions changed instructional methods by, for example, using peer-assisted learning, introducing financial incentives, giving instruction in small groups, providing more progress monitoring, using computer-assisted instruction, and giving teachers access to subject-specific coaching.

Some interventions targeted specific domains in reading and maths, such as reading comprehension, fluency and algebra, while others focused on building for example meta-cognitive and social-emotional skills.

What studies are included?

Included studies examine targeted school-based interventions that tested effects on standardised tests in reading and maths for students in Grades 7-12 in regular schools. The students either have academic difficulties, or are deemed at risk of such difficulties on the basis of their background. The interventions are targeted as they aim to improve achievement for these groups of students, and not all students.

The review summarises findings from 71 studies. Of these, 59 are from the USA, four from Canada, three from the UK, two from Germany, two from the Netherlands, and one from Australia.



How up-to-date is this review?

The review authors searched for studies published up to July 2018.

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About this summary

This summary is based on Dietrichson, J, Filges, T, Klokke, RH, Viinholt, BCA, Bøgg, M, Jensen, UH. Targeted school-based interventions for improving reading and mathematics for students with, or at risk of, academic difficulties in Grades 7–12: A systematic review. *Campbell Systematic Reviews*. 2020; 16:e1081. <https://doi.org/10.1002/cl2.1081>

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Fifty-two studies are randomised controlled trials and 19 are quasi-experimental studies.

What are the main findings of this review?

The interventions studied have on average positive and statistically significant short-run effects on standardised tests in reading and maths. This effect size is of an educationally meaningful magnitude, for example, in relation to the gap between groups of at-risk and not-at-risk students. This means that the most effective interventions have the potential of making a considerable dent in this gap.

Only seven included studies tested effects more than three months after the end of intervention, and there is therefore little evidence of longer-run effects.

Effects are very similar across reading domains. Interventions have larger effects on standardised tests in maths than on reading tests. Small group instruction has significantly larger effect sizes than computer-assisted instruction and incentive components.

What do the findings of this review mean?

The review provides support for school-based interventions for students with, or at risk of, academic difficulties in Grades 7-12. However, the results do not provide a strong basis for prioritising between earlier and later interventions. For that, estimates of the long-run cost-effectiveness of interventions would be needed.

The lack of long-run evidence should not be confused with a lack of effectiveness. We simply do not know whether the short-run effects are lasting. More research about long-run effects would therefore be a welcome addition to the literature.

More research is also needed from non-English speaking countries; a large share of the included studies is from the USA, Canada or the UK. There are also more interventions that have been tested by reading tests than maths tests, and interventions targeting maths seem like a promising research agenda.

Many studies are not included in the meta-analysis due to low methodological quality. The most important improvement to research designs would be to increase the number of units and students in intervention and control groups. Lastly, the instruction given to control groups is often not described in detail. Variation in control group instruction is therefore difficult to analyse and a likely source of the effect size variation.