
School-based reading interventions for improving reading skills and educational outcomes on primary school students in low- and middle-income countries: a systematic review

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Title of the review

School-based reading interventions for improving reading skills and educational outcomes on primary school students in low- and middle-income countries: a systematic review

Background

The development of adequate reading skills at an early age can have an enormous influence on the academic achievement of students throughout the course of their educational careers (National Reading Panel, 2000; Slavin, Lake, Chambers, Cheung, & Davis, 2009). However, the reverse is also true. Students may fall behind in school and encounter poor employment and social outcomes later in life if they are unable to develop their reading skills early in their years of schooling (Good, Simmons, & Kame'enui; 2001; Slavin et al., 2009; Whitehurst & Lonigan, 2001). In fact, existing evidence has shown that, in general, approximately 10% to 15% of children struggle with reading comprehension difficulties (Clarke, Truelove, Hulme, & Snowling, 2013; Duke, Pressley, & Hilden, 2004; Lee & Tsai, 2017; Nation & Snowling, 1999; Stothard & Hulme, 1992). Previous studies have found that the development of student reading skills is often hindered when available reading resources are of low quality, such as insufficient reading materials and teaching guidance, especially in low- and middle-income countries (henceforth, *LMICs*—Equal Education, 2011; Lavy, 2010; Moloji & Strauss, 2011). For example, a study conducted by the World Bank in 2007 found that the majority of primary school students in Southern and Eastern Africa did not have access to reading books at school (Moloji & Strauss, 2011). Studies in some rural areas of China also reveal that primary school students generally lack reading resources and reading instructions, which leads to low levels of student reading skills (Gao, Wang, Mo, Shi, Kenny, & Rozelle, 2018).

In acknowledgement of the importance of reading, many countries have established a variety of programs to encourage reading and promote the reading skill development of young students (Adler & Fischer, 2001; Slavin, Cheung, Groff, & Lake, 2008; Lonigan & Shanahan, 2009; Slavin et al., 2009). These programs vary in content and design. For example, some programs focus on improving the quality of reading instruction provided by teachers and parents; others attempt to increase the quantity of reading materials available to children (Lonigan & Shanahan, 2009).

Although these reading programs are noteworthy, there is an absence of broad consensus on which programs most effectively improve student reading skills or other educational outcomes (e.g., test scores or grades in other academic subjects) in LMICs. The results from the few existing randomized evaluations of reading programs on student reading achievement and other academic outcomes have had differing results, with some studies finding positive impacts while others finding none. For example, Lucas, McEwan, Ngware, and Oketch (2014) found that providing teachers with teaching materials and training them on how to teach reading significantly improved student language test scores (in this case, writing and oral literacy test scores) in Ugandan primary schools. Abeberese, Kumler, and Linden (2014), however, found that a program providing age-appropriate reading materials and teacher training in the Philippines did not significantly improve the math or social studies test scores of students. Borkum, He, and Linden (2012) also found that supplying better reading resources, providing a librarian, and conducting reading activities in Indian schools did not have any significant impacts on the math and science test scores of students. Due to the mixed results of these

evaluations as well as the variety of ways programs seek to improve students' educational outcomes, systematically reviewing reading interventions will provide much needed insight into the difficult but important challenge of improving childhood reading ability in LMICs.

Policy relevance

Understanding the best, most cost-effective way to incorporate reading programs in LMICs remains an urgent and necessary need. Indeed, the International Association for the Evaluation of Educational Achievement and the Organization for Economic Co-operation and Development have both recognized the importance of student reading development and regularly evaluate student reading skills worldwide (Fensham, 2015; Mullis, Martin, Foy, & Drucker, 2012).

In LMICs, government officials and non-profit organizations have increasingly focused their efforts in implementing reading programs in order to promote student reading development. For example, “The Learning for Living project,” directed by the READ Educational Trust, implemented book interventions to improve student achievement in rural South African primary schools (Roskos et.al., 2009). In another effort, USAID has been collaborating with the Ghana Education Service to improve basic education resources and increase reading proficiency for Ghanaian primary school children (USAID/Ghana, 2017). Recently, China has also begun to implement a “nationwide reading” project to encourage people to read and has announced a national focus on reading in its annual work report (GMW.cn, 2015).

Because LMICs are paying increasing attention to reading program design, conducting a systematic review of reading interventions in LMICs is both timely and urgent. It is critical to learn what programs have been developed and why they work—and do not work—to understand what interventions should be invested in and scaled up to improve student reading development and educational performance. A review of this issue would be particularly valuable for LMICs, which must allocate a scarcity of resources in the most cost-effective and efficient way possible.

Objectives

Our main goal is to systematically review school-based reading interventions for improving reading skills and educational outcomes on primary school students in LMICs. Our review is guided by the following questions:

1. What are the effects of school-based reading interventions on the reading skills of primary school students in LMICs?
2. What are the effects of school-based reading interventions on other educational outcomes, such as the math and science test scores of primary school students in LMICs?
3. How do these effects differ by different types of school-based interventions (e.g. providing reading materials, teacher training) in LMICs?
4. How do these effects differ by subgroup, such as by region, student gender, and family socioeconomic status in LMICs?

Existing reviews

Existing systematic reviews have addressed how reading programs have affected a variety of outcomes. However, these studies focus on programs implemented at the family-level, such as parent-mediated interventions that increase the time parents spend reading with children (Sloat, Letourneau, Joschko, Schryer, & Colpitts, 2015; Spier et al., 2016). Others exclusively pay attention to certain types of reading interventions (e.g., after-school programs, computer-based interventions—Cheung, & Robert, 2013; Khowaja, & Salim, 2013; Maynard et al., 2013; linguistic comprehension training interventions—Rodge, Hagen, Melby-Lervåg, & Lervåg, 2016). Even though some reviews have studied on a greater range of reading programs, they are not targeted at primary school students (e.g. studied on secondary school students— Paul & Clarke, 2016). Further, while some systematic reviews focus on primary school students as this proposal does, their inclusion criteria in their literature search are narrow and do not address the subject of our proposed review (e.g., only focused on publish papers before 2010 or only focused on randomized controlled trials—Torgerson, King, & Sowden, 2002; Lee, & Tsai, 2016).

Thus, we focus our review on this gap of literature: no review has systematically synthesized and compared the varying types of school-based reading interventions on primary school students in LMICs. While previous studies have limited scope, we broaden the focus of our review from a particular type of reading intervention to all existing programs in order to rigorously compare and understand how these different interventions may impact reading and academic development among primary school students in LMICs. We are particularly interested in school-based reading interventions because of the amount of time spent in school, which is often the only source of formal learning for students. Indeed, schools and teachers are critical supports for students to overcome reading difficulties at their early age; thus, educational policy interventions and curriculum changes have high impact potential, as research can be shared, scaled, and implemented across schools more readily than in other settings.

Intervention

For intervention studies to be included in the review, the main goal of the intervention must be primarily to improve student reading development, in contrast to broad educational interventions targeting a variety of outcomes. Because broad educational interventions may include reading programs alongside other academic programs, we exclude interventions aimed at improving students' other educational outcomes (rather than reading development explicitly) or general learning environment, even if they include reading skill outcomes. Therefore, studies will be excluded under the following conditions: 1) if the intervention is not explicitly defined as a reading intervention; or 2) if the intervention does not evaluate reading skill outcomes or other educational outcomes.

Furthermore, included studies will be limited to reading programs and interventions implemented at the school level in LMICs, such as providing reading materials to students at school or training school teachers. Interventions that were implemented at the family-level or community-level will be excluded. Examples of excluded family-level and community-level interventions include programs aimed at improving parents' participation in their childrens' reading) and after school community tutoring programs for student reading development (Kim, & Guryan, 2010; Vadasy, & Jenkins, 1997).

In conclusion, included interventions must meet all of the following criteria: 1) aimed at improving student reading development; 2) targeted to primary school students, which

means that the research sample should at least include primary school students; 3) implemented at the school level (e.g. involving teachers, classes, or students during school time); 4) compared to a control group not receiving any type of reading intervention; 5) conducted in LMICs. Additionally, there is no limit on the duration of the intervention. Furthermore, if the description of the intervention is not documented completely, we will contact study authors whenever possible to clarify program details. If the above information is not clearly obtained, the study will be excluded from our review.

Population

We include interventions in which the participants are primary school students. We focus only on primary school students, as some systematic reviews have begun to work on junior middle school and high school students. Moreover, as referenced above, primary school students are at a crucial and consequential stage of their education.

We exclude studies that specifically target primary school students with physical disabilities (e.g., vision problems) that impact their reading abilities.

Outcomes

We consider the outcomes of reading interventions to promote student reading outcomes and any other educational outcomes. Thus, we will consider outcomes in two domains: 1) reading outcomes; and 2) any other educational outcomes.

1. Reading outcomes

- Student attitudes towards reading, such as their perceptions of and confidence in reading
- Student reading behaviors, such as time that spend in reading, frequency of borrowing reading books
- Standardized tests in reading

2. Other educational outcomes

- Standardized tests in other educational outcomes, such as math or science.

Study designs

We will include randomized controlled trials (RCTs), quasi-randomized trials, and cluster-randomized trials with control groups. Within subject, single subject, or pre-posttest design without control groups will be excluded.

Studies that may be included:

Abeberese, A. B., Kumler, T. J., & Linden, L. L. (2014). Improving reading skills by encouraging children to read in school: A randomized evaluation of the Sa Aklat Sisikat reading program in the Philippines. *Journal of Human Resources*, 49(3), 611-633.

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Roles and responsibilities

All team members have attended the systematic review training course with the Campbell Collaboration and Howard White. Moreover, all members are part of the Campbell Collaboration mentoring program.

Content:

Qiufeng Gao will work with Huan Wang and Scott Rozelle to lead the content review of reading interventions. At Shaanxi Normal University, they have led a research project in rural China evaluating reading programs' effects on the reading development and educational performance of primary school students. They will determine the overall content of the review and take responsibility for the integrity of the work as a whole. They

have a extensive field research experience as well as a strong knowledge of reading development.

Systematic review methods and Statistical analysis:

Qiufeng Gao, Huan Wang, Scott Rozelle and Yaojiang Shi will provide guidance on systematic review methodology. With backgrounds in social science research, they are all familiar with statistical methodology. Moreover, they have attended the Campbell Collaboration systematic review training course both online and in person with Howard White, which ensure that they are well prepared for the methodology required for this review. Furthermore, they will participate in another Campbell systematic review training in February 2019 in Xi'an to deepen their understanding of search strategies for the protocols.

Information retrieval:

Jason Li, Lifang Zhang and Wei Nie, will jointly develop the information retrieval for review, starting with the title and abstract screening. Data extraction will be conducted by research assistants, under the guidance of Qiufeng Gao. All of them have significant experience with literature reviews and have attended the Campbell Collaboration systematic review training course both online and in person.

Funding

No funding has been received for this review.

Potential conflicts of interest

We all have participated in research that is related to this research question in some way, but if any publications from our own work are determined to be eligible for inclusion into the study, we will have an independent evaluator assess the quality of the study.

Preliminary timeframe

Note, if the protocol or review is not submitted within six months and 18 months of title registration, respectively, the review area is opened up for other authors.

- Date you plan to submit a draft protocol: Jan 2019
- Date you plan to submit a draft review: Dec 2019