RESEARCH INSIGHTS

Can Struggling Primary School Readers Improve Their Reading through Targeted Remedial Interventions?

- This paper assesses the effectiveness of an intervention aimed at improving the reading skills of struggling third-grade students in Colombia. In a series of randomized experiments, students participated in remedial tutorials conducted in small groups during school hours.
- Trained instructors used structured pedagogical materials that can be easily scaled up. Informed by the outcomes of each cohort, the intervention tools are fine-tuned for each subsequent cohort.
- The paper finds positive and persistent impacts on literacy scores and positive spillovers on some mathematics scores. The effectiveness of the program grew over time, likely because of higher dosage and the fine-tuning of materials.

CONTEXT

Literacy skills are essential for modern life, as literacy fosters the ability to learn other subjects. It additionally matters for health and political participation, and it is highly valued in the labor market. Yet about 20 percent of the global adult population is illiterate. In Latin America, two-thirds of children do not achieve the minimum levels of literacy expected for their age. The large number of children and adults struggling with reading demands attention and a remedy.

THE PROJECT

The paper presents experimental evidence on the impact of an intervention that offered remedial literacy tutoring for struggling readers in the third grade of primary school in the mid-size city of Manizales, Colombia. The experiment involved 90 schools and more than 2,000 children in three consecutive cohorts. Outside tutors were hired, trained, and randomly allocated to treatment schools. Following a structured curriculum, they provided 40-minute sessions three times a week during the school day for up to 16 weeks. The sessions were conducted in small groups (six students maximum), and the curriculum was based on a phonics approach.

RESULTS

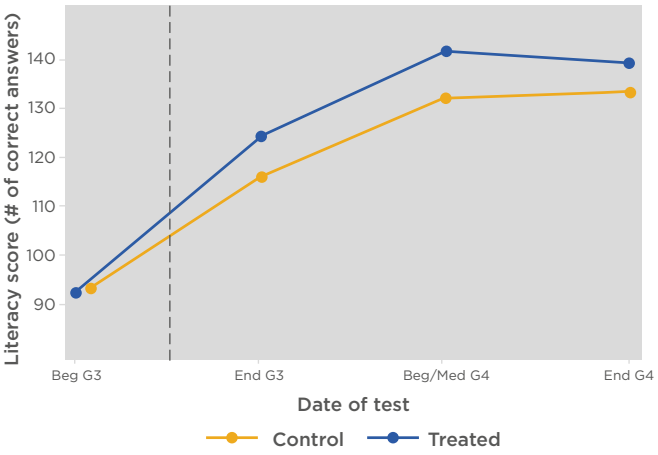
1. In each cohort of the experiment, we administered an initial literacy test to identify student who were struggling to read and who were deemed eligible to participate in the experiments. Half of the schools were randomized into treatment and half into control groups.

2. Figure 1 plots the raw count of correct answers over all literacy subtasks, aggregating the information for the three cohorts. At the beginning of third grade, on average, students in treated and control schools correctly answered 91 items. The control group correctly answered 116 items at the end of grade three, and 133 items by the end of grade four. By contrast, students in treated schools correctly answered 124 (end of Grade 3) and 140 items (end of Grade 4). The figure suggests that the treatment group experienced positive gains from this intervention, and that the gains persisted over time.

3. Statistical analysis reveals that immediately after the experiment finished (at the end of the third grade) the overall literacy score of eligible students in treated schools improved by 0.286 standard deviations compared to the score of eligible students in control schools. The overall effect is mostly explained by an increase in the ability of students to properly sound letters and an increase in the fluency of reading a paragraph.

4. The effectiveness of the intervention increased over time. The median effect estimated over all outcomes and grades increases from 0.015 of a standard deviation in cohort 1, to 0.137 in cohort 2, to 0.204 in cohort 3. These results can be explained by deliberate refining of the program. Feedback from each cohort was used to improve the intervention effectiveness in the next wave of the intervention.

Figure 1. Effect of Intervention on Literacy Score



Source: Figure 3 of Alvarez-Marinelli, Berlinski and Busso (2019).

POLICY IMPLICATIONS

1. In countries where many students are reading below grade level in elementary school, it is important to find effective remediation methods so that students acquire basic skills they need to progress in school and in life. This paper provides ideas and experiences that can be used in the design and implementation of future interventions.

2. The paper also offers a good example of how economists can use sequential experiments to adapt, refine, and test design features of a policy to beneficial effect. In the first experimental cohort the intervention was found to result in only limited gains. In conversation with their partners, the authors decided to address potential factors that explained our limited initial success. These steps included targeting, tutorial composition, dosage and the design of the material. By continuing experimentation with subsequent cohorts, it was possible to show that increasing dosage (i.e., by offering more sessions and make-up sessions) and material design are important in explaining the gains observed over time.

3. While the intervention is found to be a cost-effective remediation program, the results of the paper should not be interpreted as arguing against *earlier* interventions. Indeed, taking similar steps earlier could be even more cost-effective. A prime intervention technique could be changing the way reading is taught in earlier grades of school so that fewer children reach the third grade still struggling to read.

FULL STUDY

Álvarez Marinelli, H., S. Berlinski, and M. Busso. 2019. "Remedial Education: Evidence from a Sequence of Experiments in Colombia."

DEPARTMENT OF RESEARCH AND CHIEF ECONOMIST

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Research Insights #24: November 2020 www.iadb.org/res @IDB_research