

Numeracy Boost Results: Bangladesh

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Numeracy Boost is Save the Children's innovative program to support the development of math skills in young children. Numeracy Boost holistically pursues the goal of numeracy by doing three things: using assessments to identify gaps in the three conceptual areas of numbers & operations, measurement, and geometry; mobilizing communities for math activities; and training teachers to teach national curriculum to focus on the three conceptual areas and link instruction to children's lives.



Assessing students via electronic data collection.
Photo by Jarret Guajardo

Measurement

After collecting student background data, all students were given both literacy and numeracy assessments. The numeracy test covered three conceptual areas: numbers and operations, geometry, and measurement. Each of these conceptual areas was broken down into a number of sub-tests. For numbers and operations, students were tested on counting aloud to 100, skip counting, counting backward, number identification, number discrimination, missing number identification, timed addition, timed subtraction, and word problems.

To test geometry, students were asked to identify shapes and items from their lives in them. To test measurement, students were asked questions about four straws of varying lengths, about linking activities to time of day, and to name the days of the week and months of the year. All sub-tests and instructions were given in Bangla.

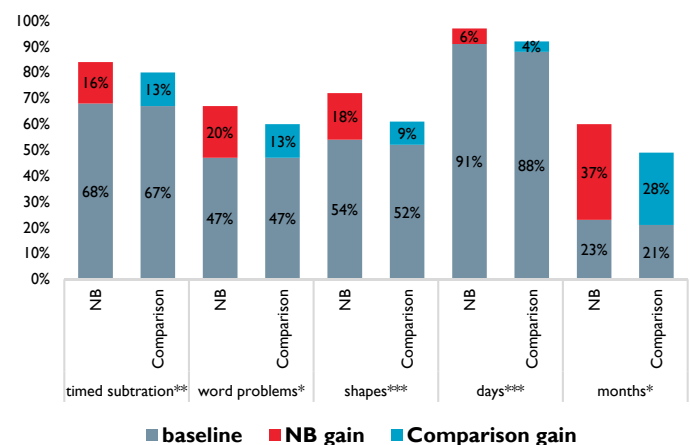
Attrition and Sample Group Differences

No difference in the attrition rate between sample groups was found. Within the sub-districts of Meherpur Sadar and Gangni, students in all groups were very similar, not differing on many of the 50 background characteristics tested. Randomization of assignment to sample groups was successful, and the groups are sufficiently comparable for a difference-in-difference impact analysis.

Impact Analysis

Students in the Numeracy Boost only group had significantly greater learning gains in their scores on five measures in Figure 1 than students in comparison schools. Overall, the greater gains among Numeracy Boost students are the equivalent of between two and seven months of additional school instruction.

Figure 1. Average Baseline Scores and Gains by Group



Interestingly, students in the combined Numeracy Boost and Literacy Boost group had significantly greater gains in several additional skills, including skip counting, missing number recognition, subtraction, and word problems. These results suggest that participation in Numeracy Boost and Literacy Boost together may produce greater improvements in numeracy skills than participation in the Numeracy Boost program alone.



Numeracy Boost successfully leveled the playing field

students with fewer learning supports at home, for those with lower socioeconomic status as well as for those with no early childhood program experiences. However, girls still lag behind boys in many skills and those with fewer types of reading materials in their household also fall behind their peers with a greater diversity of print. Numeracy Boost should continue to explore means of better engaging girls in learning and practicing their math skills, and should combine forces with Literacy Boost to ensure that the benefits of access to greater diversity of print are enjoyed by all.

Other significant patterns are related to repetition, age and absence: Older students, repeaters and those who report missing at least one day of school the week before tended to perform worse, so programming should explore remedial options available to help any children who are falling behind as well as options for further integration of School Health & Nutrition programming with Numeracy Boost.

Equity Analysis

Boys were more likely to report learning and math with their family and community as well as through everyday activities. Boys also reported a higher percentage of household members asking them to count things. At baseline, the strongest drivers of inequality in math skills were sex (favoring boys), diversity of household reading materials, and household member numeracy-supportive practices. Socio-economic status and prior early childhood program participation were also related to math skills at the start of the study period. However, by end of year, these advantages – higher home practice, higher socio-economic status and exposure to early childhood programs were no longer major drivers of inequality in math outcomes. Numeracy Boost successfully leveled the playing field for

Conclusions

- Numeracy Boost positively improved some of students' operations, measurement, and geometry skills. These additional gains are equal to between 2 – 7 months of additional school instruction.
- The students who improved the most are those students who participated in the greatest number of Numeracy Boost activities.
- Numeracy Boost has been successful in leveling the playing field for students from more challenging learning and socioeconomic environments and those with fewer or no early childhood program experiences.