Different Starting Points. A Common Learning Goal: The Bamboo Program

Bamboo Mental Maths • 10,872 students • Chile and Peru, 2016-2019

Consider a child who starts a maths assessment and can't answer a single question. Three months later, the same child answers five correctly. By the study's classification, both scores fall in the Low category. On paper, nothing changed. In practice, everything did.

That gap between what categories capture and what actually happens to individual children sits at the centre of this study.

The question

Children in the same year level don't have the same mathematical abilities. Some calculate confidently. Others understand individual operations but can't complete them independently. Some haven't developed the foundational skills expected at their level.

In 2015, Sylvia Langford assessed the mental calculation performance of 6,098 students from Years 2 to 12 across four Chilean municipalities. The results raised a straightforward question: what happens when children keep moving through school without having developed the foundational abilities they need? And more to the point - could structured practice help them develop those abilities, rather than simply documenting what they couldn't do?

What the study involved

Between 2016 and 2019, the Bamboo Mental Maths program was assessed with 10,872 students across 21 communities in Chile and Peru. Students completed 50 sessions of about ten minutes each, spread over roughly three months. The activities combined audiovisual instruction, observation, mental calculation, and practice.

Children in a group followed the same program and worked towards the same learning goal, even when their starting abilities differed.

Each student completed an initial and final assessment: 36 mental calculation questions, two-minute time limit, no assistance or calculators.

The results

Performance was classified by correct answers:

Level	Correct answers
Low	0-12
Medium	13-24
High	25-36

At the start, 6,963 students (64% of the total) scored Low.

By the final assessment, of those 6,963 students: 2,505 had moved to Medium, 2,329 had moved to High, and 2,129 remained in Low. That means 4,834 children - 69.4% of those who initially scored Low - advanced to a higher category.

Across all participants, the proportion scoring High went from 9.4% to 51%.

What the categories miss

Some of the most meaningful progress happened inside the Low category. A child who went from zero correct answers to five was still classified as Low. The category didn’t move, but the child did.

This reinforced Langford's interest in understanding learning from each child's actual starting point. Judging progress only by whether someone crossed a threshold can obscure real gains - especially for children who start furthest behind.

What this tells us

The results supported continuing to develop learning experiences that combine clear instructions, manageable challenges, appropriate repetition, and opportunities for independent work. They also strengthened a core idea behind the Langford Method: children can begin with different abilities, participate in the same organised learning experience, and work towards a shared goal.

What matters isn't just what a child can demonstrate today. It's how we create opportunities to develop capabilities they haven't yet acquired.

The limits

This was a large before-and-after assessment, not a controlled experiment. There was no separate comparison group, and individual attendance and session completion weren't tracked in the analysis. Normal educational progress and familiarity with the test format may have contributed to the improvements. The results can't establish how much of the progress was specifically caused by Bamboo.

That said, the individual and group results document real changes in mental calculation performance during the implementation period and point to questions worth investigating further.

Source: Bamboo Mental Maths assessments, Chile and Peru, 2016-2019. Individual assessment records and transition tables are available in the supporting study appendix.