

The problem

The literacy skills of children in Aotearoa New Zealand, and the country's performance on the international *Progress in Reading and Literacy (PIRLS)* assessment has declined over the past decade (Box).

Early literacy skills are an important marker of success in later education and the transition to employment. To help boost children's early literacy skills, Better Start researchers at the University of Canterbury developed the *Better Start Literacy Approach (BSLA)*, a structured approach to literacy instruction for Year 0 to Year 2 classrooms which was introduced in 2020.

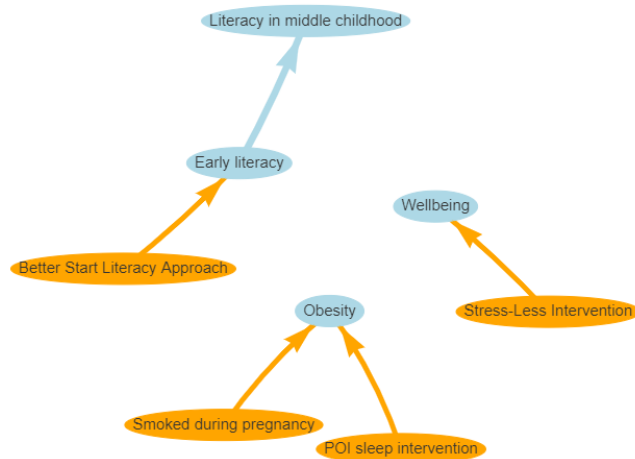


It includes the systematic teaching of critical literacy skills through fun, games-based activities, activities making explicit links to reading and spelling, and small group reading sessions. The BSLA has been rolled-out to 900 schools. Using data from over 100 of these schools, the BSLA was shown to improve early literacy for children at both typical and lower levels of oral language development, and for children of all backgrounds.

What would this look like if BSLA was rolled out to all schools? Or just to specific schools? And how would this impact reading success in the long term? It is time consuming and costly to implement these roll-outs in the real world, however, these are the types of question that can be answered with modelling. For this reason we developed the *Better Start Model*.

Better Start Model (<https://compassnz.shinyapps.io/BetterStartModelShiny/>)

The Better Start Model uses simulation to model the long-term impact of interventions undertaken as part of the 'A Better Start' National Science Challenge (ABS). The model creates virtual world of 10,000 individuals¹ – children with characteristics matching those of children born in New Zealand in 2013 – and uses results derived from interventions targeting literacy (the BSLA), early growth, and mental wellbeing, to simulate the effects of these interventions.



We model the impact of different levels of roll-out of the BSLA programme on measures of early literacy – phonological awareness: the ability to identify phonemes (individual sounds) in words at age 5-6; and the longer term impact on reading comprehension at ages 10-11 – the same measure that is used in the PIRLS reading assessment shown above.

¹ These are not real people, but 'synthetic' individuals created by analysing data from the Integrated Data Infrastructure (IDI). **Disclaimer:** These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit <https://www.stats.govt.nz/integrated-data/>.

Results

The models allows the impact of many different scenarios to be tested. The results of just two are shown here:

First, *What if BSLA was rolled out to a randomly selected 50% of all children in the country?*

The panels to the right show the results of this roll-out for children of different ethnic groups. The red dots show the ‘base’ scenario – if BSLA had not been rolled out in any schools; and the green dots show the simulation we programmed – where BSLA is rolled out to a randomly selected 50% of all children in the country. The error bars represent the uncertainty from the simulation.

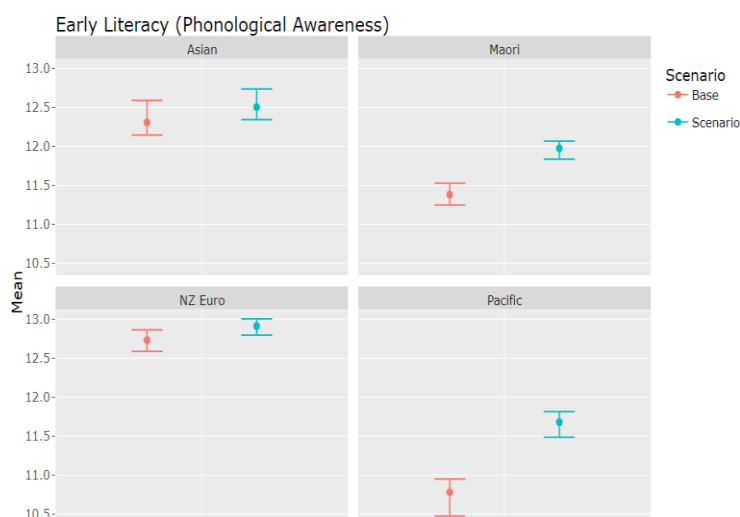
The simulation clearly shows that the BSLA improves early literacy (top panel) and that this flows through to improvements in ‘PIRLS’ scores for reading comprehension (bottom panel). Improvement is shown for children of all ethnicities, and particularly for Māori and Pacific children’s early literacy.

Second, *What if BSLA was rolled out to 50% of children from the most deprived areas of the country?*

The panel to the right shows results for early literacy for the full population. Here, Māori and Pacific children benefit most – as they are more likely to live in areas of high deprivation, suggesting this targeted intervention promotes equity

Take home message

A wide range of policy simulations can be run with the Better Start Model, including models targeting different population groups, and models that vary assumptions; e.g., what if the impacts of BSLA are smaller than research suggests? Such models are useful for evaluating the impact of different policy options and providing solid evidence for future policy decisions.



Want to find out more?

Check out the model at <https://compassnz.shinyapps.io/BetterStartModelShiny/>, or contact Barry Milne b.milne@auckland.ac.nz