

In South Africa, a Growth Mindset intervention delivered with classroom technology had big impacts on student attitudes towards learning, and student math grades.

Among the education and psychology literature that looks at the role of beliefs and school outcomes, Growth Mindset theory (GM) posits that by helping students shift their theory of learning to one where intelligence isn't a fixed state – but rather, that it's malleable, and something you can improve and grow over time – students can become self-motivated to improve both academic effort and outcomes. Teaching youth how to foster a GM doesn't just offer a potential solution at low cost to student performance; it can also change how youth approach other domains later in life with crucial consequences for reducing poverty and increasing equity, including improving labor market outcomes.

In contexts where policy makers are looking for low-cost and sustainable solutions to improve student outcomes, behavioral science may offer a proven and scalable solution in GM. In South Africa, the World Bank's Mind, Behavior, and Development Unit (eMBeD) partnered with the Western Cape Government, the University of California Davis, and Class Dojo to develop a series of sessions and videos that would help primary and high school students to develop a Growth Mindset. eMBeD's other GM interventions in Peru and Indonesia have shown that, when adapted to the context, GM can have extraordinary impact. We set out to see if the same would hold true in South Africa.

The Project

Eight high schools and twelve primary schools were recruited for the study, totaling 578 high school students from eighth and ninth grades, and 558 primary students from third and fourth grade. The students were randomized at the school level into either a treatment group (which received the Growth Mindset program) or a control group (which received a placebo program, specifically age-appropriate National Geographic videos).

Each of the five GM sessions took 30 minutes. In the initial three sessions, students watched, on individual computers, five three-minute videos created by Class Dojo, an eMBeD partner, during their after-school program over the course of one week. The videos follow two friendly monsters (age and race-neutral) during their journey of learning, failing, learning how to cope with failure, and trying again to succeed. After each video, students participated in reflection questions; high school students responded to these questions individually through the online interface, while primary students participated in group discussions guided by fieldworkers.

Students also completed reinforcement activities in the months following the sessions, in which they consolidated the knowledge learned in the video sessions. High school students were first reminded of the five videos they had watched earlier in the year; then were presented with a new video that restated the idea of Growth Mindset; and, finally, were asked to respond a few questions related to the content. Primary students re-watched the series of Class Dojo videos and drew on large paper in groups prompted by the question of what Growth Mindset means to them.



The Results

To establish a baseline, the months before our intervention, students were assessed using a series of measurements. High school measurements included: an online math test developed by the WCG's academic partner, Olico; "PERC" behavioral tasks developed by the University of California, Davis team, which measure Persistence, Effort investment, Challenge-seeking, and Resilience; and self-reported scales of self-esteem, attitudes towards learning, and Growth Mindset. The online math tests, along with school grades, were used to measure academic outcomes.



We found that the GM intervention positively impacted math grades among high school students through an improvement in attitudes towards learning (self-report scale) as the mediator: if the learner attended the three intervention days, their attitudes towards learning improved 13% and math scores improved by 4.36 points (out of 100) in their 2017 final math grade, which was further sustained and improved to a 6.76 point increase in their next math grade. This is equivalent to an 11% and 17% increase in grades, respectively, showing a persistent and increasing effect. Both treatment and control groups were fully comparable across age, grade, school, math, and PERC tests. However, we found no effect on test scores nor grades in primary school students.



Ultimately, the average high school student in the treatment achieved a math grade of 45.76 (out of 100) compared to the average control student who achieved a math grade of 39 – a very large result in the realm of low-cost educational improvements.

Policy Implications

While implementing this pilot intervention, we came across numerous barriers that policy makers are likely to face in a development context, including disruptions due to social unrest, inconsistent student and fieldworker attendance, student drop-out, and inconsistencies in implementation and programming between schools.

Nevertheless, the results of the intervention in South Africa, particularly when combined with similar eMBeD GM projects in Peru and Indonesia, are promising.

Our analysis shows that in the South Africa context, using video technology through an e-learning platform promoted by the Western Cape Government, these results can be achieved by investing less than two dollars (USD) per student. At such a low cost, allocating teachers' time to include Growth Mindset as part of the school curriculum might represent a worthwhile investment for policy makers seeking to improve student outcomes with limited financial resources. Worth noting is that as a technology-based intervention, teachers were not recipients of the GM message; had teachers been targeted as well, it's possible that the results for students may have increased beyond these already significant results. In addition, our results also indicate that students suffering from some type of adversity benefit most from learning GM as a coping skill for challenges (similar to what we find in our GM work in Peru).

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In the Western Cape context specifically, the government's commitment of resources in the form of computers and internet for all students, as well as the project's ability to provide free e-learning materials to students made a tremendous positive impact in ensuring access to the GM

curriculum and novel technology-based delivery method for participating schools. It also has implications for scale – given the success of the intervention and the accessibility of the materials, the Western Cape Ministry of Education aims to scale the GM intervention to all high schools in the region. The technology used

in this GM intervention has other important implications for policy makers. Videos work well for low-literacy environments, but may necessitate dubbing in other native languages specific to regional contexts.

Growth Mindset may ultimately be an important element in any policy maker's toolkit – as a low-cost, high-impact intervention, it not only promises sustainable and impactful results at the school level, but has potential implications for when students enter the labor market. When adapted to the circumstances of the region, there are many ways policy makers can achieve impressive outcomes integrating Growth Mindset into their policy plan for education and beyond.

About eMBeD

The Mind, Behavior, and Development Unit (eMBeD), the World Bank's behavioral science team in the Poverty and Equity Global Practice, works closely with project teams, governments, and other partners to diagnose, design, and evaluate behaviorally informed interventions. By collaborating with a worldwide network of scientists and practitioners, the eMBeD team provides answers to important economic and social questions, and contributes to the global effort to eliminate poverty and enhance equity.



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