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Missing mathematicians: Why South Africa must back bright black learners

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The recent matric results have put South Africa's education system in the spotlight. It is widely accepted that an education is one of the most powerful ways to uplift people and transform societies. But not any education will do. Several studies show that it is the quality of education that drives economic development, not pass rates or years of schooling. Countries with better quality education grow faster.

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In the 2023 Trends in International Mathematics and Science Study (Timss), South African Grade 4 learners finished last in both mathematics and science. And, as several studies show, there is a strong correlation between economic growth and test scores.

In Western Cape public schools around 23,000 black learners took the 2023 National Senior Certificate (NSC) exam, but only 100 earned an 'A' in maths. Similarly, just 168 out of about 27,000 coloured learners also achieved distinctions in maths.

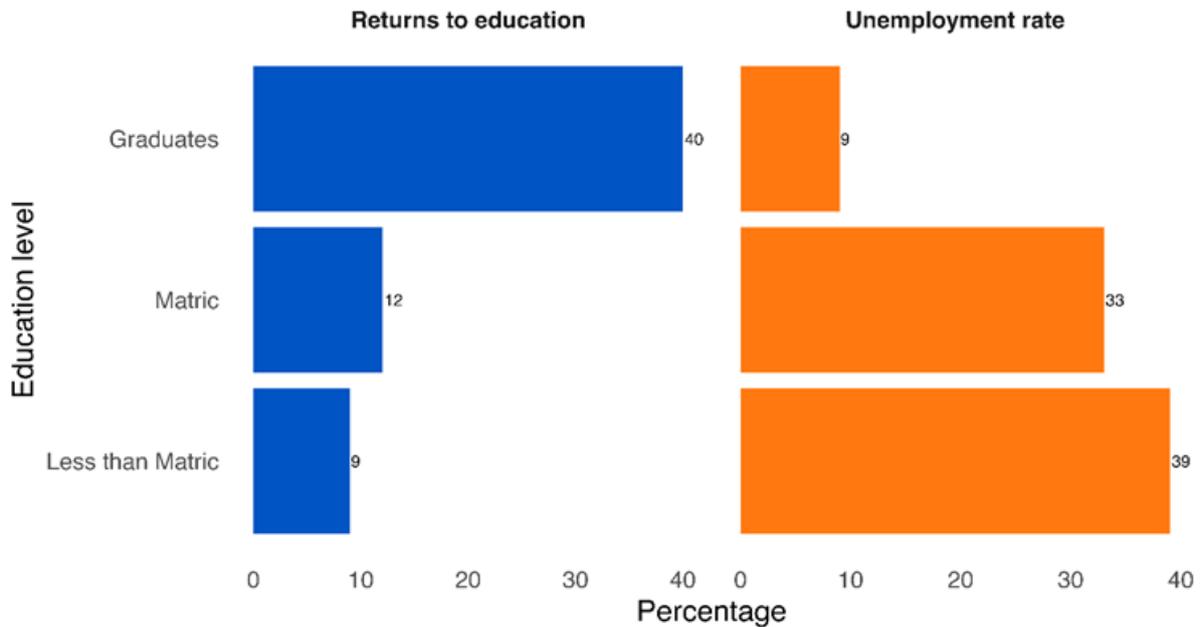
The challenge is how to build an education system that produces higher quality pass marks, particularly in the STEM (science, technology, engineering and maths) subjects so that learners are better equipped for tertiary study and the demands of the job market.

According to the United Nations Educational, Scientific and Cultural Organisation (Unesco), South Africa invests an exceptional 6.5% of its GDP in public education, ranking eighteenth globally, with educator salaries consuming about one in every ten rands of government expenditure. Our progressive tax system relies heavily on a small cohort of top earners who were likely high academic achievers in their youth.

South Africa has some of the highest returns to education in the world. Investing in high-potential learners could, therefore, have an outsized impact on improving the fiscal sustainability of public education. Moreover, equity would be enhanced if historically disadvantaged learners were targeted.

In short, investing in the brightest learners in the poorest schools could simultaneously advance equity and long-term economic growth.

UNIVERSITY PAYS OFF



Note: Returns to education represent the percentage increase in earnings associated with completing each level of education compared to those who completed the previous level.

Source: Stats SA Quarterly Labour Force Survey (2023); Montenegro & Patrinos (2014); Stats SA (2024).

CREATING TOMORROW'S TAXPAYERS

Another problem is that many school-leavers, despite having achieved bachelor pass rates, are still unprepared for university. This is one of the reasons why only 20% of black university entrants complete three-year degrees on time. So, simply expanding the number of bachelor passes is not going to cut it.

A more surgical strategy is to identify academically gifted Grade 6 learners from disadvantaged backgrounds and support them so that they can attend top-performing high schools. The Western Cape is well suited to running such a programme as it is the only province to conduct systemic assessments at primary school. This would allow it to pinpoint exceptionally bright Grade 6 learners in mathematics who would then receive fee support, transport, and psychosocial services to thrive in the province's top public high schools.

On average, quintile five high schools already meet international benchmarks —Timss 2019 data place them on par with Norway while the provincial average aligns more with

Morocco. By selecting 300 high-performing Grade 6 learners each year and nurturing them through the top secondary schools, it may be possible to double the number of those achieving standout results over five years. (Magnet schools in the United States have shown that well-targeted investments can produce outsized gains.)

Top public schools in the Western Cape charge R30,000-R80,000 a year. Factoring in transport and additional school-related expenses, a more realistic estimate of the cost per learner is around R100,000 a year. Funding 1,500 learners at that rate would total about R150m a year - just 0.5% of the province's R30.5bn education budget.

These costs could be covered through government-funded scholarships, philanthropy, private tax-deductible donations, or a central matching fund where private donations are doubled either by government or a large non-profit organisation.

Bringing academically talented learners to the best schools needn't be unfeasible. In the Western Cape, there are likely at least 300 learners meeting the criteria who already perform well enough to manage the academic transition without extensive external help. For those who do require additional bridging, top-performing schools are perhaps best equipped to provide extra classes or tutoring. This approach is far more cost-effective than expecting under-resourced schools to develop these advanced capabilities on their own.

Socioemotional support is perhaps more crucial. Shifting to a high-achieving school is likely to be emotionally taxing. The programme would need dedicated counsellors to help learners navigate socioemotional hurdles, equipping them with strategies to allow them to flourish in these new environments. This would ensure that bright children do not slip through the cracks simply because of their background.

Importantly, this proposal neither neglects nor derails broader improvements to education. South Africa's education system has, in fact, improved dramatically over the past three decades, yet this improvement has not occurred at the top of the learning and income ladders. We also need black elites — academically gifted students who become tomorrow's leaders, doctors, accountants, engineers (and taxpayers) and who can plough back support into their communities. Focusing on a smaller cohort of high-potential learners at an early stage is the cheapest way to accelerate their development into this leadership cadre, especially compared with waiting for the entire system to rise to the same standard.

Finally, a programme of this kind shifts priorities away from the matric pass rate towards earlier learning, creating more accountability for primary school outcomes. And by investing in a visible group of future high performers, the hope is that the system as a whole would gain momentum from their successes.

Ultimately, raising top talent from disadvantaged backgrounds is not a zero-sum game; it can spark broader improvements while cultivating a new generation of black South African leaders.

This article first appeared in the Business Day on 31 January 2025. Peter Courtney is at the Research on Socio-Economic Policy (RESEP) unit at Stellenbosch University and a PhD candidate at the Vrije University Amsterdam; Claire Bissek is an economic writer and researcher at the Bureau for Economic Research (BER).

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