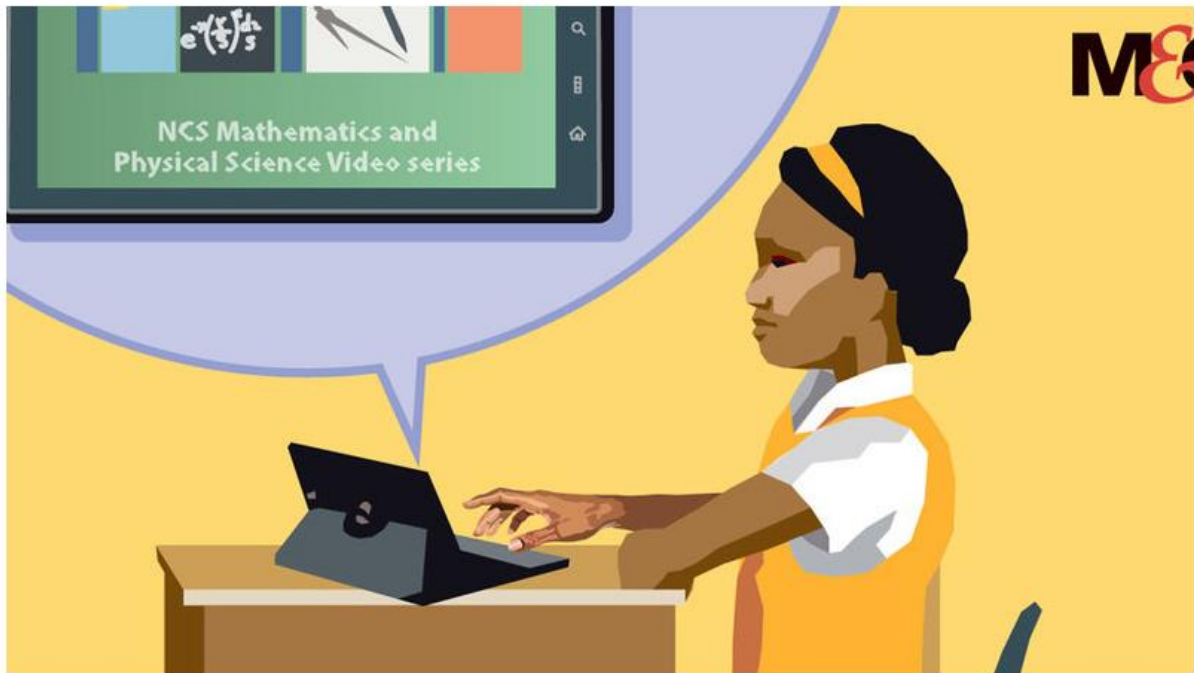


Programme multiplies pupils' success

Nicky Willemse 16 Aug 2019 00:00



(John McCann/M&G)

Two years ago, Queenstown teenager Yamkela Sondlo (17) narrowly scraped through her grade 11 end-of-year exams for maths and science at Nkwanca high school, obtaining 32% and 31% respectively.

But her final results for grade 12 last year showed a vast improvement. She obtained 64% for maths and 78% for science.

The turning point for Yamkela came when she was selected to be a participant in a maths and science programme using technology and blended learning run by Nelson Mandela University's Govan Mbeki Mathematics Development Centre.

Statistics recently released by the centre show that she was their most-improved pupil for both maths and science last year.

"The programme helped me so much," said Yamkela, who lives with her unemployed parents. But she is not the only one. Of the 330 pupils who completed the centre's grade 12 incubation programmes in five mostly rural districts across the Eastern Cape last year, 70 improved by more than 10 percentage points in both subjects.

And about 80% achieved bachelor's passes, enabling them to access university studies, despite the meagre resources in rural schools.

The top-achieving learners received results in the 90s and one pupil, Mvuyisi Njenje, 17, from Attwell Madala High School in Mthatha, achieved 100% for maths.

Whereas Yamkela is taking a gap year, many of her peers from the programme are attending university, including Luphelo Tshemese (17) who passed matric at Hector Petersen High School in King William's Town with 80% for maths.

He is now studying civil engineering at Nelson Mandela University.

"I was in a position where I thought I was dumb," said Luphelo. "I learned that maths is not hard. You just need to understand it and practise it. I started to believe in myself and put in the effort." The centre's selection criteria for its programmes is that pupils attend disadvantaged schools, and that they show potential.

At the end of grade 10, Luphelo was selected as a participant in one of the centre's two core programmes — the technology-assisted after-school peer support programme — where teachers provide tutoring to small groups of pupils at their own schools, using an offline interactive teaching and learning app called TouchTutor, installed on tablets.

With improved results at the end of grade 11, he was accepted for the centre's other core programme, an intensive 17-week incubator school programme run at a central venue on Saturdays, where trained facilitators provide lessons, tutorials, weekly tests and exam revision, all linked to the TouchTutor app.

"I learned to tackle problems in a different way," said Luphelo. "I learned easy, quick methods for areas I'd been failing [in] for a year ... The tests we wrote on the tablet made us able to tackle difficult questions on the exam."

TouchTutor, which has been developed and fine-tuned over the past 10 years, is an extensive digital maths and science resource that includes narrated video lessons, presentations, past exam papers and memos, self-tests with scoring and feedback, science experiments, calculator support, a glossary of terms supported by graphics in multiple languages and various other interactive features. The platform is aligned with the curriculum and assessment policy statement for grades 10 to 12 and workbook guides have also been developed.

All learners on the programmes receive a tablet with the app, which is loaned to them from February to November, which they can use after school hours as a 24-7 personal tutor. For Luphelo, one of 10 children raised by his grandmother, the incubator school programme was not just a place to gain information but a quiet space where he could focus and study. "I came home each Saturday with knowledge," he said.

"This model has huge value for learners with potential who are prepared to engage with self-directed learning," said Professor Werner Olivier, director of the Govan Mbeki Mathematics Development Centre.

"Each year, we allow those who have improved by 10% in a year in both maths and science, or achieved distinctions, to keep their tablets. Across our five project regions last year — Port Elizabeth, Duncan Village (East London), Queenstown, Mthatha and King William's Town — more than 20% of the pupils achieved this and were able to keep their tablets.

"Some individuals showed extraordinary improvement, which emphasises the potential of what can be achieved through our programme."

The aim of both the core programmes is to help pupils from disadvantaged backgrounds obtain the marks they need to access higher education and to be successful in their studies.

“We’ve seen a trend of successes over the past five years. Around 50% of all those in our programmes go to university. We’ve had some going into medicine and actuarial sciences. Many go into engineering and the sciences,” Olivier said.

In the Port Elizabeth incubator programme, the centre’s most improved pupil in both maths and science was Onondwa Jantjies (17), who is studying towards her BSc degree in biological sciences at the University of the Witwatersrand, and is hoping to be accepted into the university’s medicine programme in her third year.

“The incubator school programme improved my chances of getting into Wits and prepared me well for university ... At my school, we had no access to science labs, but I could watch all the experiments on the tablet ... If I didn’t know something, I could just check the tablet,” she said. “I also love the fact that the programme is so accessible to poor kids. They paid for our transport to the incubator school programme venue and provided food. They made everything so easy for us.” Olivier would like to see the model scaled up across South Africa — and has recently set up strategic partnerships with the department of basic education in different provinces.

He has also established maths and science development initiatives with various universities, and with nongovernmental organisations focusing on similar outreach programmes.

The TouchTutor model is offline so it’s completely independent of infrastructural and environmental difficulties in most public schools in South Africa, including security and internet access issues.

“Our model has the potential to address some of the challenges for skills development in this country ... As an offline support system, TouchTutor would also articulate well with the government’s approach to provide web-based digital resources,” said Olivier.

TouchTutor also includes elements of Steam education, where art is added to the traditional science, technology, engineering and maths (Stem) model, preparing learners for the creative solutions they will be required to make in future careers.

Over and above the core programmes, aimed at grade 10, 11 and 12 learners, the centre also sets up resource hubs in schools, where any pupil can access the app after school hours. It also runs separate accredited professional development programmes for teachers.

Teachers are trained on a device called the Gamma Tutor, which is used as a teaching assistant for the classroom. It is pocket-sized and can be connected to any digital device.

The centre’s programmes are sponsored by major local companies, including the Capitec Foundation, Old Mutual, Exxon Mobil and the Cookhouse Wind Farm Trust.

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