To code or not to code

With an education system that hasn't changed in years, the Department of Basic Education has its sights set on a coding initiative.

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There was much fanfare when the Department of Basic Education (DBE) announced its plans to introduce a coding and robotics curriculum into South Africa's public schools.

Many saw this as an opportunity for the department that is charged with developing, maintaining and supporting SA's basic education system to address some of the digital skills criticisms it's faced over the years.

However, as quickly as the news emerged, so did the red flags. How exactly is the DBE going to achieve its new coding and robotics objective? Top of the worry list is the lack of technologically-savvy teachers, availability of resources and the fact that many young learners still struggle to read and write.

Rocky start

In partnership with other stakeholders, the DBE confirmed it had established a Professional Development Framework for Digital Learning, to make way for a coding and robotics curriculum for grades R to 3.

The curriculum, the department believes, will develop learners' ability to 'solve problems', think critically, and work collaboratively and creatively, function in a digital and information-driven world, apply digital and ICT skills, and transfer these skills to solve everyday problems'.

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As part of the initial phase, DBE officials revealed that only around 50 schools will participate in a pilot, kicking off at the start of the second school term in 2020.

However, the outbreak of the coronavirus has thrown a curveball on the new curriculum plans, as the department has had to shift focus on getting the academic year going in a Covid-19 State of Disaster.

With all that is happening, the jury is still out about the department's coding initiative.

Moira de Roche, IITPSA non-executive director and chairperson of the IFIP International Professional Practice Partnership, believes there's a high likelihood the coding projects will fail. This, says De Roche, is mainly because she doesn't believe that many teachers are capable or even motivated to teach this curriculum.

For Tiyani Nghonyama, COO and co-founder of Geekulcha, success is dependent on capacity. "Having been on the ground with Geekulcha's programmes, I'm not confident of the current capability in our classrooms, but I'm encouraged by the Professional Development Framework for Digital Learning document set out by the Department of Basic Education, which sheds light on a new breed of teachers.

"The 10 competencies required of a beginner teacher don't assume access to or support of digital tools and resources, but one competence (No.5) requires 'highly developed literacy, numeracy and information technology skills'," he says.

Back to basics

The 2016 Progress in International Reading Literacy Study (PIRLS), which was the third study that SA participated in, found that 78% of South African grade 4 learners could not read for meaning.

The PIRLS, administered every five years, is an international comparative assessment that measures student learning in reading of fourth graders.

South Africa's DBE agreed to participate in the study because reading literacy is one of its priorities.

For South Africa, the study found there was lack of ability to correctly answer basic questions, which possibly indicates an inability to read on their own and/or understand basic text.

Professor Felix Maringe, head of the Wits School of Education, believes there is merit to introducing a coding curriculum, especially in the age of the Fourth Industrial Revolution.

However, Maringe is concerned about investing in such initiatives at the expense of more fundamental issues like reading and writing, which he says need to be mastered before children get into schools.

"I've been thinking about the fact that it might be necessary in South Africa to increase the number of years that kids do some learning before they go to school in grade 1. Whereas we've got grade 0, I'm suggesting that we probably need a grade 0 and then a grade 0 plus before we get into grade 1. That grade 0 plus might be a year where kids are actually taught to read and start writing.

"It's a shame that we continue talking about a country that has some of the best resources in Africa, and yet when we compare our performance to countries like Malawi, Mozambique and other places – with relatively fewer resources – we are always at the bottom."

Professor Maringe stresses that the reason South Africa often finds itself at the bottom remains that learners can't read and write. "We should invest a lot more resources in that particular area," he says.

For De Roche, the DBE should focus on getting the basics right. "It (the coding and robotics curriculum) can be a good grounding for learners who want a future in coding, but do they know that in grades R to 3? It should be seen more as a tool to teach logical thinking, reasoning, problem-solving and creative thinking – all of which are 4IR skills."

Geekulcha's Nghonyama believes that whatever mechanisms ought to be applied in getting the basics right, learners need to be cognisant of the needs of the growing smart world. "The only way to prepare for the future is to take that first step in nurturing future leaders. It's important that we set the future in motion. The department might make mistakes, but we as different sectors of the society must be enabled to help support the efforts for future's sake."

Coding generation

Mari Lategan, executive for marketing and communications at Curro Holdings, says there is great value in introducing subjects such as coding and robotics into the curriculum for learners at a young age.

"Subjects such as these help prepare learners for jobs of the 2030 workplace, notes Lategan. "As it stands, we're unsure of what these careers will look like; however, we do know they will include data analytics, automation, machine learning, artificial intelligence and the Internet of Things.

"For these careers, coding and problem-solving skills are essential. Technology and coding will leave no occupation untouched. It's essential that learners become coding-literate."

Therefore, to get the coding curriculum on the right footing, De Roche advises the department to get a rigorous teacher training programme going, set up an implementation team that includes teachers and experts in the field, and, most importantly, political will. "Government seems to be good at making pronouncements, but implementation falls short because of the lack of will."

Maringe says the coding and robotics curriculum is a welcomed development, but it must be implemented very carefully. "Never forget the most important things, which are reading and writing. Once kids have the fundamentals of reading and writing, it's easier for them to navigate the school curriculum."