

# Cultivating the skills ecosystem of the future

*Friday, September 29, 2023 9:30 AM (25 minutes)*

By stating that the skills ecosystem needs cultivation, I imply that it needs care –that there currently is a skills shortage. Within my context, the skills shortage refers narrowly to the shortage of software developers in South Africa. I will argue that the way we do the cultivation is as important for the Physics skills ecosystem. Over the past 5-10 years, there has been a significant growth of software development companies in Gqeberha. S4 Integration, the biggest employer of our graduates, has been acknowledged more than once as the Exporter of the Year for the software they write for European clients. However, local industry partners such as S4 Integration, JAS, Avocado Chocolate, VSC Solutions, and Jendamark acknowledge that employing new developer talent remains a growing challenge. This reality is prevalent across South Africa, and there are growing signs that it applies more and more to the rest of the continent. During my visit to Europe in March, the conversations I had highlighted a similar pattern in countries such as Germany, the Netherlands, Ireland, and the UK. Whenever there is a skills shortage in the job market, companies first turn to, what we call “Harvesting the Pipeline”. This refers mainly to aggressively recruiting from university graduates, or from employees at other companies. This clearly does not address the skills shortage. Another way of doing it is to “Nurture the Pipeline”, which is upskilling your own staff –once again with its own challenges. Our engagement project, Tangible Africa, believes we need to “Feed the Pipeline”, or as our title says, cultivate the skills ecosystem of the future. Tangible Africa is an engagement partnership between Nelson Mandela University Department of Computing Sciences and the Leva Foundation. Our objective is to introduce school learners to coding concepts and careers without the use of computers. Since its inception in 2017, as an honours project by Byron Batteson, Tangible Africa’s initial coding app TANKS (followed by RANGERS and BOATS) has been instrumental in educating over 100 000 learners and training 20 000 teachers in tangible coding. The games entail providing learners with specific challenges related to moving objects around on a grid, using a mobile device. The commands to move these objects are provided by making use of customised physical tokens, which are uniquely identified by QR Codes (referred to as Top Codes). When a photo is taken of the tokens, the commands are internalised before being executed, which moves the object on the screen of the device. The presentation will expand on this project, highlighting the 21st century skills that are enhanced, in addition to coding. These skills include computational thinking, problem solving and strategy. We believe that this is the pivotal link between what we do and the world of Physics.

## Abstract Category

Physics Education

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