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ENGINEERING EDUCATION

New technology laboratory opens in Johannesburg

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Last month, education consultancy Sangari launched the Life Sciences Lab and the Land Rover 4 × 4 in Schools Technology Challenge at the Sci-Bono Discovery Centre science museum, in Johannesburg.

The lab and the 4 × 4 challenge will be run in partnership with Sci-Bono, the Gauteng Department of Education and Sangari South Africa.

Sangari MD **Bez Sangari** explains that the Sangari Life Sciences Lab provides an opportunity for learners from schools across Johannesburg to carry out experiments in a hands-on fashion, providing a more exciting and memorable experience.

The South African leg of the international Land Rover competition for model 4 × 4 vehicles will see the winner compete at the world finals in the UK in 2017.

"The 4 × 4 challenge requires learners to complete a predesigned course with a vehicle of their own design to encourage science, technology, engineering and mathematics (Stem) skills," he says.

Life Sciences Building

"Through the use of the kits we have provided, learners are able to set up experiments quickly, observe experiment results safely and come to scientific conclusions in a practical way in the laboratory," Sangari notes.

The Life Sciences Laboratory comprises small-scale science kits, digital science experiment technology, the Sangari iBox with its comprehensive science content and wireless local area network-connected tablets.

He points out that the equipment is used across the industry with universities also adapting to use the technology.

"While traditional experiment techniques are still valid, there is a strong move towards the use of digital sensors and data loggers. Our learners have, however, never had the chance to see or experience this technology. The Life Science Laboratory gives everyone the opportunity to be acquainted with the future," Sangari explains.

The iBox provided in the Life Science Laboratory creates a digital teaching resource, creating, according to him, a complete interactive classroom that enables the teacher to share information and receive feedback from learners in real time, making learning a measurable outcome.

SCIENCE LABORATORY
The Sangari Life Sciences Lab allows students to experience experiments at their own pace

Creating Opportunity

The Land Rover 4 × 4 challenge encourages learners between the ages of 11 and 19 to form teams of four to six members and design and build a radio-controlled 4 × 4 vehicle, based on set specifications to compete on a 4 × 4 obstacle course. Sangari explains that the challenge aims to give young learners an insight into what it takes to become an engineer.

He says that teams entering the challenge will spend a number of weeks researching, designing, building and project managing their 4 × 4 vehicle and then enter a regional heat to compete against other schools in their region. Winners will be selected through a judging process to decide who will go through to the national final where they will compete to become the Land Rover 4 x 4 in Schools Technology Challenge South Africa national champions.

The rookie class – up to grade nine – are required to design and manufacture their own vehicle body, along with the tilt and light sensor and the professional – grades 10 to 12 – class will need to make structural changes to the vehicle and design new mechanical parts for their 4 × 4 vehicles.

He concludes that registration for the programme is free for all schools in South Africa. The competition centres on broad cross-curriculum learning as a result of the blended learning

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TECHNOLOGY CHALLENGE FOR LEARNERS

The Land Rover 4 × 4 in Schools Technology Challenge is an international competition that has participants from around the world. It requires that students build a radio-controlled four-wheel drive (4 × 4) vehicle to the specifications provided by the International Rules Committee of the challenge.

The vehicle must be able to perform all of the tasks a normal 4 × 4 vehicle can do, each vehicle is tested on a track created to test the full capabilities of the vehicle. Each team enters a regional final and the winners of each region gets to go through to the national final of their country.

The national winners from each country are invited to go to the Land Rover 4 × 4 in Schools Technology Challenge world finals in the UK. Each team has a minimum of three members and a maximum of six members, the age groups of each team ranges from 11 to 19 and every team can be a mixture of different ages. There are two classes of the competition, the beginner class and the professional class. The teams decide which class they enter and have to register before the regional finals.

The beginner class can be entered by any first time competitors and can buy a Land Rover 4 × 4 starter kit from their local organiser. The kit contains a remote-controlled vehicle, a battery and charger and requires that the team build the body, electrical system and have an in-depth understanding of the vehicle suspension system.

The professional class is open to anyone. It requires that the vehicle be manufactured from scratch and has to follow the rules and regulations set out by the competition.

The Land Rover 4 × 4 in Schools Technology Challenge is raising awareness, enthusiasm and interest in engineering through the practical application of design and technology, mathematics and science.

CONTINUED GROWTH
A new centre will be opened in Atteridgeville next year

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ensure that students don't get lost in this important stage of their career journey," he points out.

Moodley states that the programme is a powerful support system, as the senior students who use the PROTEC education centres can mentor new students and serve as role models.

"Every PROTEC centre has a mentorship programme because mentorship, formally or informally, is at the heart of the PROTEC model . . . Matriculants at each branch are encouraged to join the PSP to receive support and mentorship in the challenging first year of university . . . As they progress, they develop from being the recipients of the support to becoming mentors to the younger students," Moodley points out.

Meanwhile, PROTEC has other centres in Gauteng as well as the Eastern Cape, Mpumalanga, Limpopo, North West and KwaZulu-Natal, which are continually updated with the latest technology, providing students with computers and software sponsored by multinational technology company Microsoft Corporation.

"It is heartening to see how many PROTEC students give back to the programme and become inspirational role models . . . by volunteering, offering tutoring and assistance," says Mzobe.

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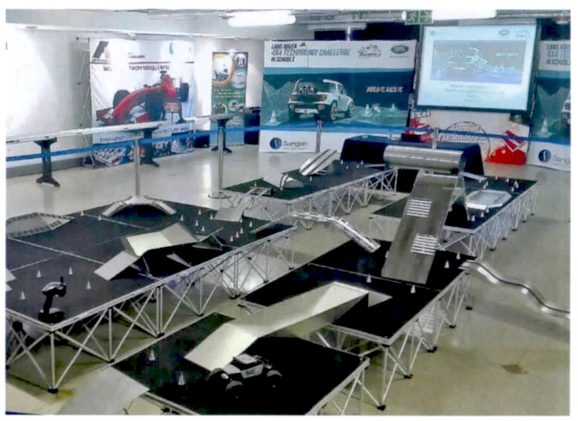

4 × 4 CHALLENGE
The 4 × 4 course follows a route that creates several challenges for students that participate

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experience, where learners apply what is acquired in the classroom.

"The true value lies in how learners take ownership of their own learning."

"Many, if not most children in Gauteng, come from previously disadvantaged communities with no access to even basic laboratories and equipment, let alone high-quality equipment that is available at Sci-Bono.

"We will ensure that thousands of learners and teachers have an opportunity to visit the lab at no cost, maximising the benefit and actual contribution by Sangari," explains Sci-Bono COO **Tebogo Gule**.

She explains that learners are able to make use of tablet PCs, affording learners access to the content on the local server in the Sci-Bono building that can be accessed by teachers who upload course work and other helpful documents.

This allows learners to work at their own pace and learn through the medium most suited to them.

"The teaching and learning laboratory has been set up at Sci-Bono to demonstrate the effectiveness of combining the excitement of learning through discovery with the power of modern education and technology," says Sangari.

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