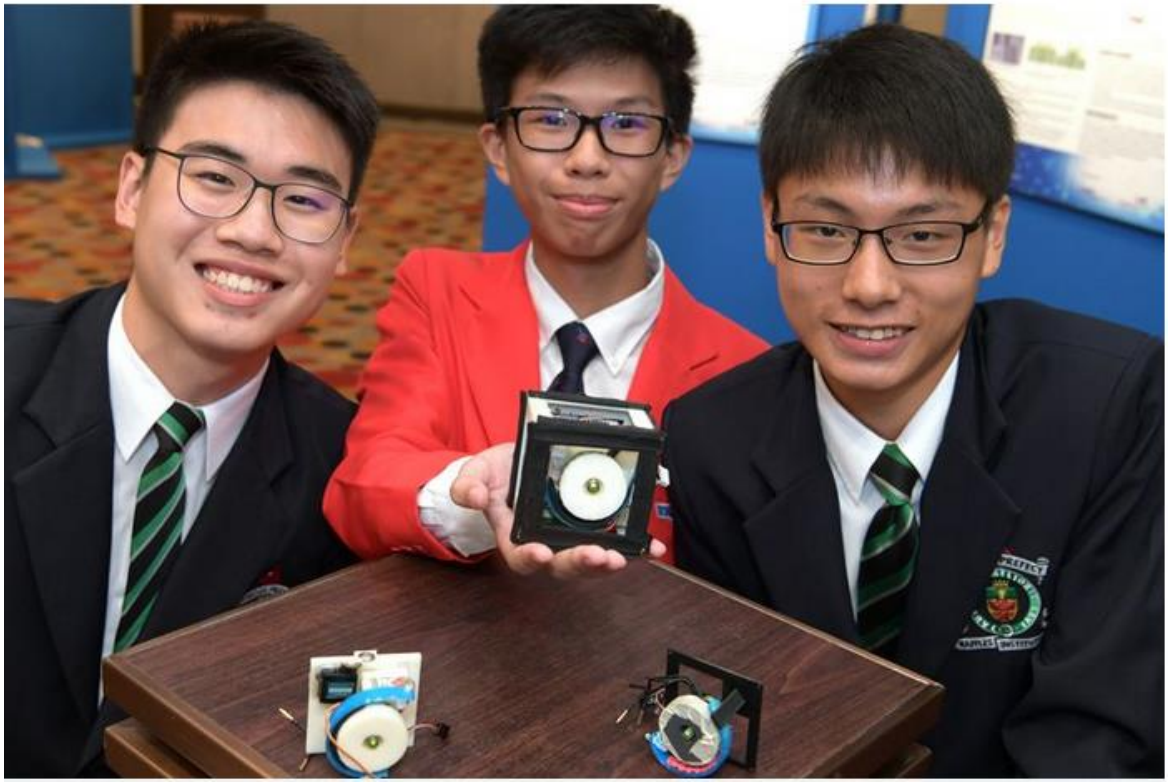
Students as young as 16 learn defence technology skills



(From left) Raffles Institution student Lim Zinn-E, River Valley High School student Hubert Choo and Raffles Institution student Jerald Siah with their Reaction Wheel Actuator for All Terrain Locomotion robots.ST PHOTO: NG SOR LUAN

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SINGAPORE - Imagine the day when a vehicle is capable of righting itself by flipping over after an accident.

A combined team of River Valley High School and Raffles Institution students aged 16 to 18 created a mechanism for a robot which can do just that. They hope the technology can later be used in vehicles as well.

They were among some 260 students as young as 16 who among other things, dreamt up ideas, tested algorithms and created robots under the Young Defence Scientists Programme.

Jointly organised by the Defence Science and Technology Agency (DSTA) and DSO National Laboratories (DSO), the Research@YDSP programme is designed to nurture students' interest in defence science and technology.

Take the project called Reaction Wheel Actuator for All Terrain Locomotion. In simple terms, it refers to an internal wheel mechanism which propels a robot forward and allows it to move on complex terrain.

The mechanism, which also helps the robot to flip over when it is knocked down, was built by Hubert Choo and his team.

The River Valley High School student said besides picking up technical know-how, they also received hands-on guidance from their mentors.

"We wouldn't cover this in the curriculum...it's about the application of skills.

"But beyond that, it's about working with different people and stepping out of our comfort zone to ask our mentors for advice," said Hubert, 18.

The students went through a four-month attachment which included mentoring by research staff and engineers from DSTA, DSO, Temasek Laboratories, and other research institutes.

The programme also exposed students to real research work in fields such as robotics, artificial intelligence (AI) and cybersecurity.

Dr Maliki Osman, Senior Minister of State for Defence, said: "The defence arena is a hotbed for the growth and development of new technologies, especially with the presence of hybrid threats.

"Here in Singapore, the Defence Technology Community has been working with the Singapore Armed Forces to innovate and turn concepts into reality.

"In the face of new emerging threats and our manpower challenges, we need to rely on ourselves to innovate and achieve a quantum leap in our capabilities."

Ms Lo Man Ling, programme manager at DSTA's National Security Programme Centre, was one of the mentors who worked with the students.

She said: "It's amazing what they can learn and accomplish within a short period of time, when they are provided with hands-on experience and exposure to real-life applications of complex concepts."

Students built their own robots and components using 3D printing and milling tools.

All 50 student projects were showcased on Monday (April 16) at the Orchard Hotel.

At the event, 29 students received the DSTA Junior College Scholarship. Each student will receive $2,000 over two years.

Other scholarships and academic awards were also presented to students for their outstanding performance in mathematics and physics, and to bright students with an interest in science and technology.

Avellin Wong , 17, was a member of a two-men team who created an obstacle-avoiding robot.

The Raffles Institution student said: "I really see myself entering the engineering field...Research@YDSP further strengthened that decision to do so in the future."