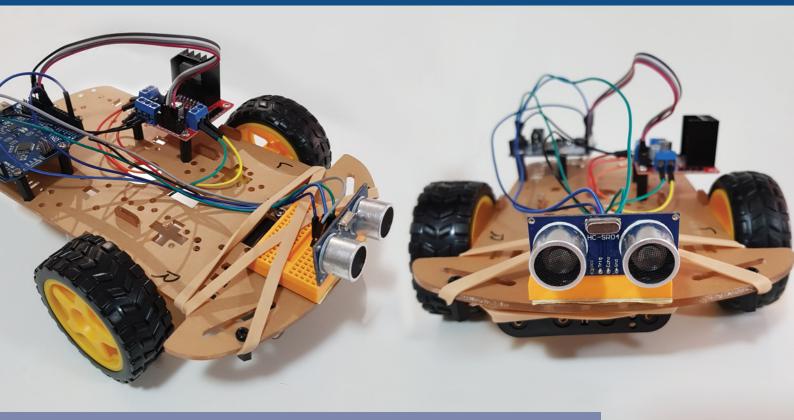# TECH TALK FOR PRINCIPALS

ScopeIT Education –Term 4, 2018   Edition #9

Robotics in the Classroom - Almost Certainly Not!

As classrooms across the world rapidly develop to cater to the new 21st century learning curriculum, one subject truly stands front and centre of mind. Digital Literacy. The T in STEM. Technology.

A technology subject that immediately comes to mind for many is robotics, as many of us imagine a future almost outnumbered by machines that help, hinder (or even hurt!) us. Of course, many schools are attempting to dive into the topic to ensure their students stay ahead of the pack. One of the first things they notice is the cost. These robotics programs don't come cheap. In fact, the vast majority of schools can't afford them, or if they can,

the purchased robots often quickly lose their appeal and become dust collectors.

Perhaps there's a better way to ensure the true basic elements of robotics are being taught in a way that continuously promotes creativity.

Let's first work out what robotics is all about. Some terminology to start:

Robots v Robotics

Robot: An end result construction. A combination of software (coding) and hardware (electronics) to result in an automated machine that usually involves physical motion.

Robotics: The subject of robots. A combination of the study of design, construction and end user operation of a robot.
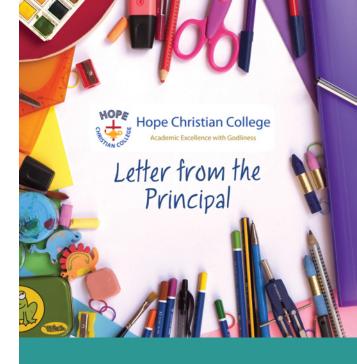
So let's get straight to the point of this article then. Utilising Sphero in your classroom is not robotics. It IS a robot, but the students are not employing robotics learning. They are in fact doing some elementary CODING. They are the end user of the robot, engaging in its use by giving instructions. It is analogous to saying a child playing a racing car game on the XBox is learning automotive engineering. They simply are not. They are learning some fundamentals of how a car drives, via steering, acceleration, braking etc. In the same way, students using Sphero are not learning design or construction of robotics, they are, however, learning how to use a robot.

Why does this matter?

This matters because students are actually learning the valuable first steps to robotics (that is coding), but at a hugely inflated cost. There is absolutely no need. There are a multitude of ways to learn coding, many of which are free or quite cheap and accessible to every student at every school. One does not need to spend hundreds or thousands on Sphero, Lego Mindstorm or other robotics items to start.

Let's set students up for success

If we are going to educate students on the very valuable and exciting path to learning robotics, that is designing, constructing and operating them, let's ensure they all get the chance to learn the correct fundamentals right from the beginning. The logical learning pathway is for students to learn the basics of coding, giving them an understanding of what underpins robotics - design. The next step is to provide some electronics learning, giving a functional understanding of how robots are constructed. Once they have mastered these important concepts, robotics is an exciting and rewarding topic to put coding and electronics into practice, in concert with a robotic physical device. You can see from our robot that the electronics form a highly visible connection for the students to the robot car, which gets coded to perform actions. And we know, commercial robots are expensive. Schools shouldn't be shouldering the cost of fast-moving robotics technology. They are specialist devices that we regularly update and bring along to our robotics classes.

Letter from the Principal

Hope Christian College has employed ScopeIT Education to deliver Digital Technology lessons to our students in Year 3 through to our Year 9 students and to provide Digital Technology incursions for our Year 10, 11 and 12 students.

This partnership has proved very advantageous for our students and staff in a number of areas:

- ScopeIT Education are performing a vital role in ensuring that the WA Digital Technologies curriculum is being implemented in our school.

- The students are constantly engaged during their lessons and, from feedback received, enjoy these weekly lessons immensely.

- The teaching staff who accompany the students during lessons are being upskilled in Digital Technologies.

In my dealings with the company I have been very impressed with the high level of professionalism displayed by their staff.

The engagement and rapport that they have achieved with the students and staff is commendable, I have no hesitation in recommending ScopeIT Education to any school who would wish to engage their services.

- Mr Stone, Principal,
Hope Christian College, Western Australia