

Scorpio Technology

NEWSLETTER

INSIDE THIS ISSUE



Page 1

STEM at Primary & Junior Secondary – Clip Circuits
Secondary Electronics
Teacher Conferences & Workshops



Page 2

This Month's Q&A Technology Tips:
3D Printer Safety guidelines



Page 3

Open source electric vehicle platform
"ROBOBUG"



TEACHER CONFERENCES & WORKSHOPS

Scorpio is attending or supports these Design & Technology teacher activities:



DATTA WA – 5th July, 2019
STEAM FUTURES CONFERENCE (VIC)-
 23 August 2019
DATTA ACT – 21st September, 2019:
 TECHnow Conference
DATTA AUST - 14-20 October 2019:
 Design & Technologies Week 2019
ITE (was IATE)- 27-29 November 2019



*Technology is a tool,
 NOT a learning outcome.*

William Ferriter
 (teacher and author)

WELCOME



This month we focus on showing how Scorpio can help learning become more meaningful and fun so that your students are motivated to learn.

STEM AT PRIMARY & JUNIOR SECONDARY – CLIP CIRCUITS



Clip Circuits are project kits that allow students to investigate electricity safely and in a motivational way.

The kits are made up of separate colour coded parts that clip together to make an electrical circuit. No previous knowledge of electronics is required.

Scorpio stocks a fun, educational range of **Clip Circuits** . Check out our online catalogue for more details.

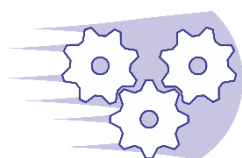
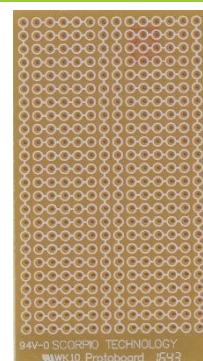
ITEM NAME	CODE	PRICE
STARTER LAB 14 EXPERIMENTS	HJ020	\$16.50
ELECTROLAB 80 EXPERIMENTS	HJ0080	\$35.00
NOISY LAB	HJ0021	\$19.80
ADVANCED LAB 180 EXPERIMENTS	HJ080	\$57.25
FM RADIO	HJ0032	\$21.95
HELICA FAN CAR	HJ0031	\$21.00
AIRBOAT	HJ0030	\$19.80
INTELLIGENT ROVER ROBOT	HJ1100	\$79.95

Teaching kids about electronics has never been so fun!

SECONDARY ELECTRONICS

You may have noticed that the electronic component range is increasing.

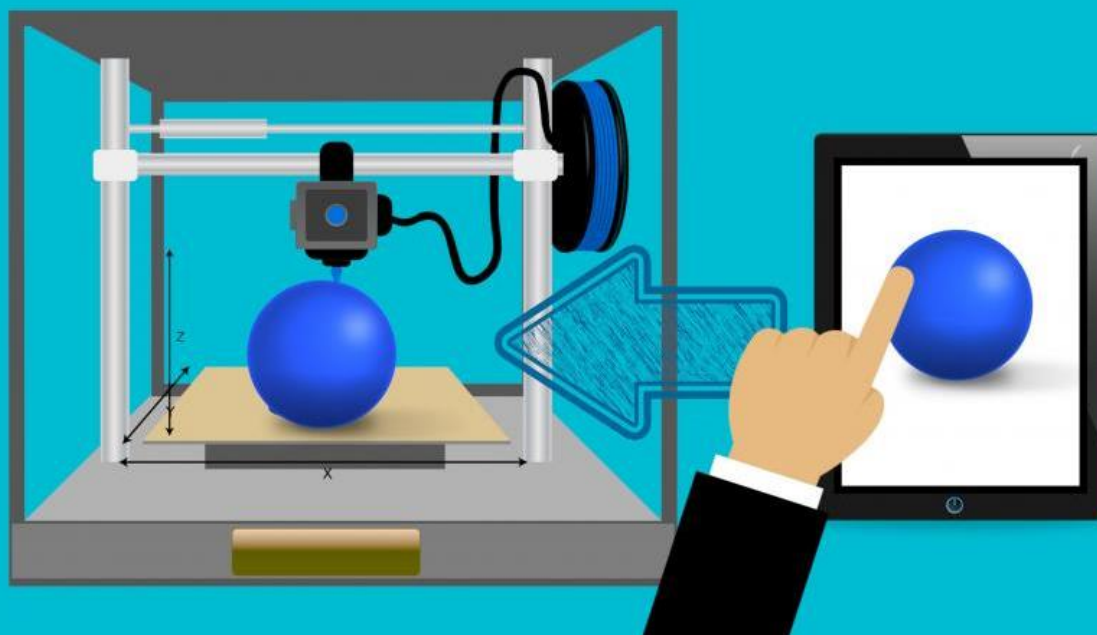
- ☆ You can now replace those components that are hard to find elsewhere.
- ☆ Replace components that are lost or damaged.
- ☆ Use our 336 hole **Protoboard** (Code: **PCB-PROTO**) to design your own simple circuits. Dimensions: 88mm x 38mm.



SCORPIO TECHNOLOGY Vic Pty Ltd
 1/31 Dalgety St. Oakleigh Vic 3166
www.scorpiotechnology.com.au

July 2019

This Month's Q&A Technology Tips: 3D Printer Safety Guidelines



3D printing has been a major part of our Technology classroom. It is now just another tool that is available for our students to investigate. Our Robobug has been widely used with 3D printers so we thought we'll investigate a bit further. As with other tools it has its own safety concerns. We were amazed that 3D printing is not as safe as it was once thought.

Q: What guidelines should we follow when using 3D printers?

A: 3D printers have their own safety guidelines due to hazards associated with their use.

RISKS

- ▽ Choose PLA filament (Polylactic Acid) rather than ABS (Acrylonitrile Butadiene Styrene) as it is bio-degradable, made from cornstarch, and considered safer.
- ▽ 3D printers emit ultrafine (nanoparticle) clouds and fumes. These toxins may enter the body through the lungs potentially causing respiratory problems, cancer, asthma and nervous system effects.
- ▽ Over 200 toxic substances (VOC - volatile organic compounds) are known to be produced during operation depending on the type of filament used. Use systems and materials that have been tested and verified to have low emissions.

3D Printer Safety Guidelines



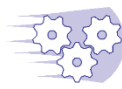
- Operate in well-ventilated areas with proper exhaust systems.
- Stand away from machines when operating.
- No eating or drinking around 3D printers.
- Wash hands thoroughly after working with 3D printers.
- All work surfaces must be cleaned by a wet method. Sweeping and other dry methods can create airborne particles.
- Once a printing job is started, do not open cover.
- If interlock safety switch fails, do not use the printer.
- Printer should not be left unattended during operation for an extended period of time.

Q: How energy efficient are 3D printers?

A: 3D printing uses more energy than conventional methods such as injection moulding (50 times more electricity). At present 3D printing is only suitable for small runs.

REFERENCES:

- <https://www.engineering.com/3DPrinting/3DPrintingArticles/ArticleID/18080/3D-Printing-Health-Risks-Identified-by-UL-and-Georgia-Tech.aspx>
- <https://www.makersempire.com/3d-printing-safety-in-schools/>
- <http://techgenix.com/3d-printing-health-hazards/>
- <https://www.rit.edu/fa/grms/ehs/content/3-d-printer-safety>, (Rochester Institute of Technology, NY)
- <https://ehs.ucr.edu>, (University of California Riverside – Environmental Health & Safety)
- <https://3dprinting.com/news/safe-3d-printing/>



“ROBOBUG”

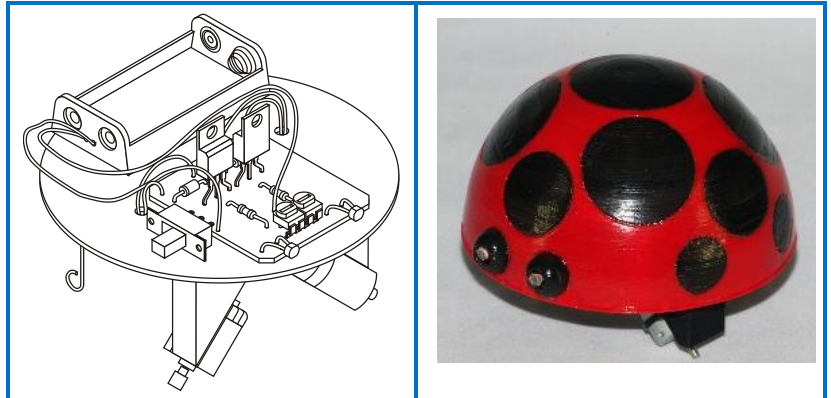
We all know that when we our students are inspired they work at a higher level of interest and creativity. ***“What we learn with pleasure we never forget.”*** (Alfred Mercier).

Robobug is one such project. It is a small light-sensing robot that can be controlled (steered) by shining a small torch onto its sensors.

The benefits of the project are its flexibility. Students are involved in all stages of the project giving them the chance to actually learn!

***“What we
learn with
pleasure we
never
forget.”***

Alfred Mercier
(writer and physician)



S	<ul style="list-style-type: none"> Study minibeasts, e.g beetles Light sources – experiment with different light sources to identify which is the most suitable to use with LDRs.
T	<ul style="list-style-type: none"> Create your own unique Robobug design. Investigate how component placement and orientation affect the devices shape (e.g. square, round, oval, octagonal, tear drop). Project lends itself to the use of different technologies and manufacturing techniques. Students could try laser cutting, vaccum forming, 3D printing different parts of the body. Problem solving using construction steps that contribute to a quality solution. Identifying electronic components e.g. LDRs, diode, transistor, trimpot, resistor. Component orientation, placement, etc. Correct soldering technique.
E	<ul style="list-style-type: none"> Use the Engineering Design Process throughout the project. Evaluate the suitability of various materials for the body of the Robobug, e.g. aluminium, plywood, PVC, acrylic sheet.
A	<ul style="list-style-type: none"> Create a Mood Board showing ideas for a Robobug shape and cover. A fun activity is to create a cover using a cut-down soft drink bottle. Decorate as desired.
M	<ul style="list-style-type: none"> Students will learn about scale drawing. Costings for each project are calculated using excel spreadsheet.

NOTE: Adjust these ideas to suit the student Learning Stages.