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### TEACHER CONFERENCES, WORKSHOPS & EVENTS



Scorpio is attending or supports these  
teacher activities:

[DATTA QLD State Conference 2023](#)  
online and onsite, Brisbane Convention  
& Exhibition Centre from **15 – 16-06-  
2023**

[Design and Technologies Week](#) Octob

[DATTA ACT Conference](#) Daramalan  
College, Dickson, **Sat 09-09-2023**

[Victorian Model Solar Vehicle  
Challenge](#) **14-15-10-2023**

[iTE Technology Education  
Conference 2023 TechExpo](#), Sydney  
Masonic Centre, **30-11-2023 – 01-11-  
2023**

[DATTA WA Conference](#) Bridging the  
Gap Edith Cowan Uni, Perth, 30-11 to  
01-12-2023

[DATTA VIC Conference](#) Future  
Innovators, NCAT Preston **01-12-2023**

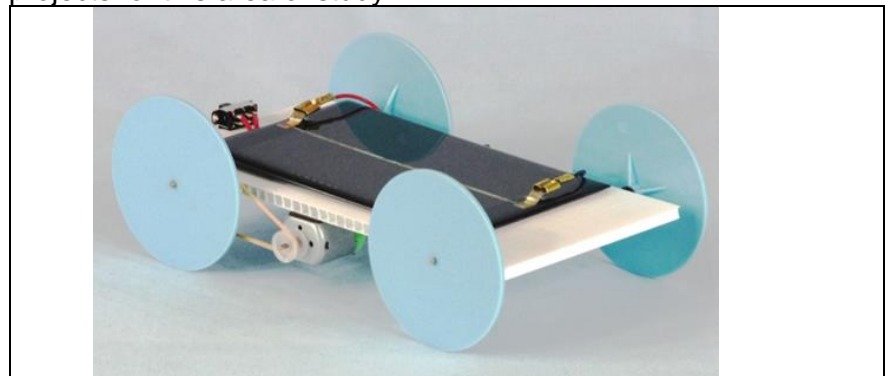
## WELCOME

This month's newsletter looks at design. We explore design in the automotive industry.

Remember, we're here to support you, however we can. Contact us at (03) 9802 9913 or email us at [sales@scorpiotechnology.com.au](mailto:sales@scorpiotechnology.com.au)

## PRIMARY STEM: MOTION

Primary school students can be introduced to the concept of motion by constructing, studying, describing, and learning to measure motion. Scorpio has developed and sourced some great projects for this area of study.



### THE BLUE BROTHERS NO SOLDER REQUIRED (NS)

A favourite series of kits. All mechanical and electrical components, as well as the platform, are supplied. These kits have been designed so that the students not only assemble the vehicles, but also provide opportunities to investigate areas of science such as electric circuits, solar energy and velocity.

**BLUEY** Code: BLUEY

**BREEZY** Code: BREEZY

**BLUEBIRD** Code: BLUEBIRD

**BLUE SKY** Code: BLUESKY

Other kits that are educational and fun for motion studies include:

**PROPELLED CAR** Code: PROPC / Code: PROPC-NS

**SOLAR CAR (BASIC)** Code: SOLARB / Code: SOLARB-NS

**DRAGSTER** Code: DRAG / Code: DRAG-NS

**MOTION** Code: SCM165 from the Snap Circuits range

**THE AERO CAR** Code: HJ1800 by Heebie Jeebies

**AIR POWER ENGINE CAR** Code: FS631

Our **Primary School catalogue** for more inspirational ideas.

**LEARN TO MAKE,  
MAKE TO LEARN**

***“When you design for the future, you  
create a world that is better.”***

*Unknown*





**NOW AVAILABLE: Low temperature glue gun, glue sticks and gloo mats.**

**Click here:** <https://www.scorpotechnology.com.au/>



Glue Gun Mini – Low Temperature  
Code: GLUEGUNMINLT



Glue Sticks for Low Temp Glue Gun Mini (Size: 7 x 100 mm)  
GLUESTKLT-12 (12 sticks)  
GLUESTKLT-24 (24 sticks)



Glue Mat – Silicone (Size: 194 x 270 mm) Code: GLUEMAT

## GLUE GUNS

Glue guns are used to bond two surfaces together. There are two main types – hot glue and low temperature glue guns. Low temperature glue guns operate at about 130 °C while high temperature glue guns typically operate at about 195 °C. Each type uses different formulations of glue.

If possible, choose a glue gun with a kickstand or a cradle. If you don't have a kickstand, use tool on a protective surface while gluing.



### GLUE GUN TIPS

- Ensure the glue gun has heated up prior to use.
- Do NOT touch the metal tip – to avoid BURNS.
- More glue is released when the trigger is squeezed harder.
- Keep the metal tip clean from glue.
- Choose the correct glue stick for your glue gun. Only use hot glue sticks for hot guns and low heat for low temperature guns.
- Many users prefer longer sticks for convenience.
- Glue sticks are available in different colours and with glitter. Check if they are suited to your gun and requirements.
- For heat sensitive materials such as polystyrene try using an alternative (such as PVA adhesive).
- Turn off glue gun after use to prevent damage to the glue gun from overheating of the glue.
- If you need to remove or relocate a component after the hot glue has cooled, you can soften the glue by using a heat gun or hair dryer.

### FEATURES

Strongest bond

Suits delicate materials such as lace, foil, ribbon, lightweight fabric, floral foam

Suits heavier material such as metal, wood, plastics, ceramics, magnets, leather, jewellery making and all non-porous material.

Arts and crafts activities

**HOT      LOW**

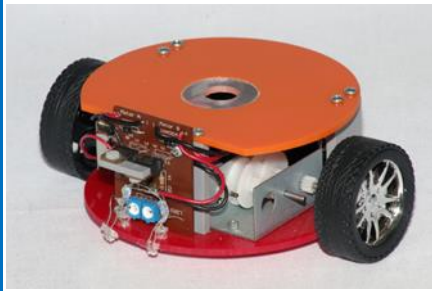
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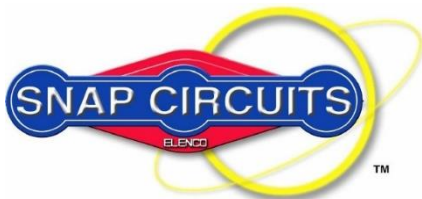


### **WOMBAT V2 is now available.** (Code: WOMBATV2)

Same electronics but using the Versatile gearbox instead of the Intermediate gearbox.

The WOMBAT is a black-line following device. An electronic circuit senses the line and changes the speed of each wheel so that WOMBAT follows the line. Contains 2 gearboxes and the PCB.

Why *WOMBAT*? The project's designer said that *WOMBAT* is an acronym for "*Wide Ocular Motor Based Automatic Tracker*".



Remember to check out our **Snap Circuits** range is being **drastically reduced to clear**, while stocks last.

See our website for prices. Great for small groups and also home education settings.

**Click here:** <https://www.scorpiotechnology.com.au/snap-circuits>



**I tried to build a wooden car once.** It was going to have everything wood. Wooden chassis, wooden body, wooden engine, wooden gearbox, wooden diff, wooden wheels, wooden headlamps, wooden blinkers, even a wooden radio.

But no matter what I did, it just wouldn't go.

**What do you call a German electric car?**

A Voltswagen.

**Why do electric cars finish the race early?**

Because they are on a short circuit.

**What do you need to be able to drive in the outback?**

You need to show koala-fications.

**I use BMW to go to work.**

Bus, Metro, Walk.

**If I owned a DeLorean, I would probably only drive it from time to time.**



### **DID YOU KNOW?**

In 1970 the Government of the State of Victoria became the first in the 'western' world to introduce legislation for compulsory wearing of seat belts.



# DESIGN PROCESS: Automotive Design

Anita Vejins



*“The art of automobile design has progressed, until today it is regarded as one of the most important factors in the marketing of the automobile.”*

Harley Earl (1893-1969))



Early cars were designed more like horse drawn carriages. With time their design changed until it resembled what we know today.

## The importance of design

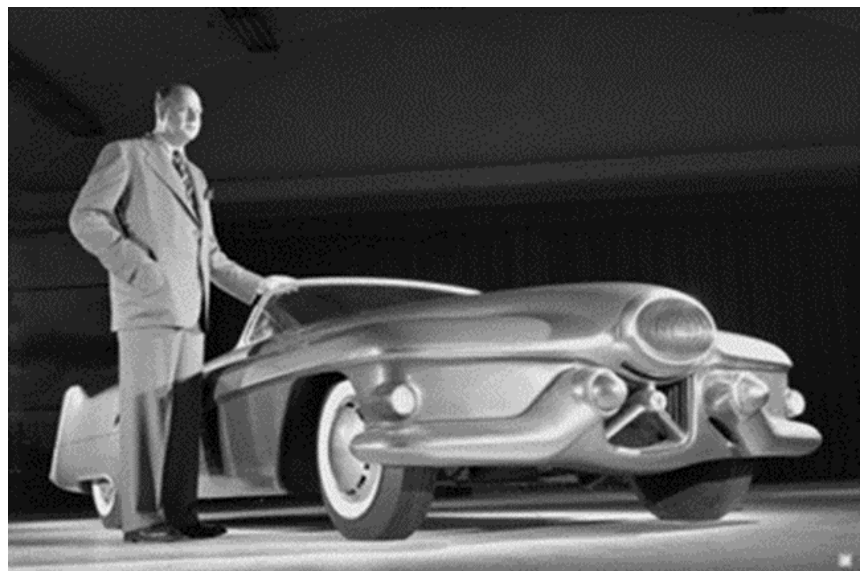
Early designers understood that the car needs to be functional and also aesthetic so that people will buy it.

**Harley Earl** is regarded as being the architect of the modern automotive design process.

In the 1930s Harley Earl, was head of General Motor's styling studio. He pushed the notion that a car was not only a useful object but that it could be a work of art or a fashion statement.

Earl noticed that blueprints and drawings of cars did not accurately represent what a car would be like. He wanted to see what the car actually looked like. Earl was the first to use clay to turn sketches into full scale models.

This innovative approach changed the car design industry by simplifying and speeding up the design process. In time, design was seen as integral to the development process as engineering and marketing.



Before a clay model is created, months of preparation, sketches, planning, and decision making are involved.

## Why make clay models of cars?

- A full-scale model assists designers to visualise their design. The model can be evaluated from all angles and adjustments can be made.

- Judgements are made if the design is functional and aesthetically pleasing. Prototypes are used to experiment with bends, curves and lines.
- Changes can be made quickly without the need for drawings and accurate sketches.
- Full sized clay models tested in wind tunnels can be changed to improve aerodynamic efficiency.
- Clay models allows designers to spot flaws in digital renderings.
- Clay is readily available and can be reused.

When the clay model is completed, it can be finished to resemble a real car. The model can be sprayed with metallic paint, headlights, door handles, windows and logos etc. are added. This visual representation is then further evaluated. The entire clay model is scanned. Then the model sits in cold storage, until the design process is complete, and the model is no longer needed.

The construction of clay models can cost manufacturers hundreds of thousands of dollars per vehicle. The clay used today is specially formulated with wax, oils, and fillers and contains no clay. To decrease cost some car manufacturers use a Styrofoam base or aluminium frame on which to apply the clay. This decreases time and the amount of clay used. Today, with CNC machines and data-driven systems, a detailed model can be milled overnight for sculptors to begin working on. Just like the entire car industry, it's evolved to be faster.

## Computer-Aided Design (CAD)

Computer-Aided Design is used to design a realistic 2-dimensional drawing of a car. The drawings can be scaled, rotated, looked at closely etc. but may not show problems with the design that only appear on a large size model. Today the clay model can be scanned into the CAD system avoiding the painstaking time required to draw the design. CAD is also used to draw other car components.



Computer technologies have reduced the car industry's use of clay models but due to the advantages of viewing and evaluating a life sized model rather than a 2-dimensional one the clay model is still a valuable asset.

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