



## WELCOME

Welcome to our newest e-newsletter with loads of new products to make learning more meaningful.

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)

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Please ensure your order and your  
Accounts Department has our correct  
details.

Scorpio Technology Vic Pty Ltd  
Unit 1/31 Dalgety Street, Oakleigh Vic  
3166

### TEACHER CONFERENCES & WORKSHOPS



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

**DATTA QLD** - 4-5/06/2021 National & State  
Conference, Brisbane

**DATTA AUSTRALIA** – 2<sup>ND</sup> week October  
Design & Technologies Week Theme:  
"Developing Creative Problem Solvers"

**ITE** – 24-26/12/2021 Technology Education  
Conference, Sydney

**DATTA VIC** – 2-3/12/2021 Conference

## PRIMARY STEM: MEASUREMENT



Measuring allows students to understand  
the world around them. Check out the  
range of measurement tools in our  
Primary school catalogue or the full  
catalogue for more measuring tools.

**Click on link:** <https://www.scorpiotechnology.com.au/catalogues>

### WEATHER & METEOROLOGY

- **Anemometer** – Cup (Code: 1055043)
- **Wind vane** (Code: HSVANE) showing compass directions
- **4M Weather Station** (Code: FSG3279) features a wind vane, anemometer, a thermometer and a rain gauge.

### RULERS

- **Meter Ruler - Wooden** (Code: MRPH0062)
- **Meter Ruler - Plastic** (Code: MREX100)
- **Safety Ruler - 300mm** (Code: RULEM30)
- **Measuring Square 100** (Code: SQUARE100)

### HEIGHT

**Clinometer** (Code: CLINO) Easily calculate the height of any tall object. Aim, squeeze the trigger and view the angle of inclination. Use some simple maths and you have the height.

### TIME

**Sports Timer** (Code: STOP) Basic quartz sports timer 1/100th second stopwatch Split / lap time Hours, minutes, seconds Day, date, month

### TEST EQUIPMENT

**Ammeter, Voltmeter, Galvanometer, Digital Multimeter**

### CLEARANCE items

- **Sand Timer** (Code: IP094059)
- **Giant Classroom Thermometer** (Code: LER0380)
- **Student Theodolite** (Code: IP129259)

**FCFS**  
{first come, first served}  
Don't miss out on  
these limited edition deals.



**LEARN TO MAKE,  
MAKE TO LEARN**

*"The most effective way to do it, is to do it."  
Amelia Earhart – aviator (1897- 1939)*



# JUST SOME OF OUR NEW PRODUCTS:

<p style="text-align: center;"><b>PRIMARY</b></p> 	<p style="text-align: center;"><b>PRIMARY</b></p> 	<p style="text-align: center;"><b>SNR PRIMARY/SECONDARY</b></p> 
<p><b>Air and Water Power (Code: SN555001)</b></p> <ul style="list-style-type: none"> <li>• Build your own models powered by air and water pressure to learn about the laws of physics.</li> <li>• 15 models to construct</li> <li>• Includes 48-page colour instruction book.</li> </ul>	<p><b>Codegamer (Code: SN620141)</b></p> <ul style="list-style-type: none"> <li>• Learn to code by playing a video game!</li> <li>• Requires a tablet or smartphone running iOS or Android®.</li> <li>• 64 page manual, 47 parts, 34 experiments.</li> <li>• Built-in Rechargeable Batteries</li> <li>• Ages: 10+</li> </ul>	<p><b>Physics Pro V 2.0 (Code: SN625314)</b></p> <ul style="list-style-type: none"> <li>• Discover the world of statics, dynamics and more advanced topics including fluid dynamics, energy, oscillation, hydraulics, and pneumatics.</li> <li>• Explore the behavior of water and air and objects immersed in them.</li> <li>• The 96-page, full-color experiment manual. More than 212 parts</li> </ul>
<p style="text-align: center;"><b>SNR PRIMARY/SECONDARY</b></p> 	<p style="text-align: center;"><b>SECONDARY</b></p> 	<p style="text-align: center;"><b>SECONDARY</b></p> 
<p><b>Newton's Colour Disc Counted on Motor (Code: AR1110610)</b></p> <ul style="list-style-type: none"> <li>• The simple unit is used for demonstrating that white light is comprised of all the spectral colours through the mixing of these colours</li> <li>• An 80mm multi-coloured circular disc mounted on low voltage DC motor</li> </ul>	<p><b>Slinky-Helix 75x50 (Code: SWSPR7.5)</b></p> <ul style="list-style-type: none"> <li>• Demonstrate different types of waves, to measure a wave function and for demonstrating a variety of physics concepts</li> </ul>	<p><b>Resonance Apparatus 1m Vertical Scale (Code: SWRESAPP)</b></p> <ul style="list-style-type: none"> <li>• Conduct resonance in air experiments.</li> <li>• Use a tuning fork to agitate the air column at the top of the column. Adjust water level and make calculations to determine wavelength and frequency of the tuning fork.</li> </ul>
<p style="text-align: center;"><b>SECONDARY</b></p> 	<p style="text-align: center;"><b>SECONDARY</b></p> 	<p style="text-align: center;"><b>SECONDARY</b></p> 
<p><b>Steel Tuning Fork Set (Set of 13) in Wooden Case (Code:</b></p>	<p><b>Melde's Apparatus (Code: AR1120520)</b></p>	<p><b>Simple Resonance Tube Set with Tuning Fork (Code:</b></p>

<p><b>PH0744A)</b></p> <ul style="list-style-type: none"> <li>Designed for use in physics experiments</li> <li>Best quality nickel-plated steel, plain shanks, with frequency marked from C (236) to C (512)</li> </ul>	<ul style="list-style-type: none"> <li>Used to show the effects of vibrations in a stretched cord</li> <li>Also used to investigate the relationship between tension and density</li> </ul>	<p><b>PH0715)</b></p> <ul style="list-style-type: none"> <li>A simple apparatus that clearly demonstrates the principles of resonance without requiring a water column or other apparatus</li> <li>Includes a 512Hz tuning fork</li> </ul>
<p style="text-align: center;"><b>SECONDARY</b></p> 	<p style="text-align: center;"><b>SECONDARY</b></p> 	<p>We're just received a shipment of exciting new products to make learning meaningful. Further information on our website.</p>
<p><b>Energy Conversion Kit (Code: AR1100050)</b></p> <ul style="list-style-type: none"> <li>Used to observe the effect of these three electrical energy conversion systems on the components supplied.</li> <li>Includes battery, solar cell &amp; hand driven dynamo selectable via a knob fitted on the base.</li> </ul>	<p><b>Static Charge Indicator - Polarity Detector (Code: AR1080430)</b></p> <ul style="list-style-type: none"> <li>Useful for determining the charge on objects – indicates the positive &amp; negative polarity charge</li> <li>Includes set of 3 electrostatic rods (positive charge, negative charge &amp; no charge).</li> <li>Better results than an electroscope</li> </ul>	<ul style="list-style-type: none"> <li>Archimedes Principle kit</li> <li>Budget ray box</li> <li>Collision in 2D</li> <li>Compact wave tank</li> <li>Constantan &amp; enamelled wire (various gauges)</li> <li>Crooke's Radiometer</li> <li>Displacement vessel</li> <li>Happy and sad ball</li> <li>Laboratory equipment e.g. flasks, beakers, cylinders</li> <li>Lenses – a great range of sizes, concave/ convex to suit Light, Applied and Optics experiments</li> <li>Magnets</li> <li>Manoscope</li> <li>Plotting compasses</li> <li>Spring balances</li> <li>Steam engine (sectional)</li> <li>Wind tunnel</li> </ul> <p><b>AND LOTS MORE</b></p>

Click on link: <https://www.scorpiotechnology.com.au/catalogues>

## SECONDARY:

### This Month's Q&A Technology Tips: Lithium-ion Batteries

#### Q. Safety measures with Lithium-ion batteries (Li-ion battery)?

**A.** At present Scorpio only sells only one button type Lithium-ion battery but many commonly found items use Li-ion batteries such as phones, computers, toys and cordless appliances.

**ADVANTAGES:** Low failure rate, low self-discharge, long cycle life and high energy storage in relation to size.

**DISADVANTAGES:** Need to be used and handled with greater care than traditional batteries.

#### **CAUTION:**

- Store the batteries at temperatures between 5°C and 20°C
- A Li-ion battery will usually power down when a short circuit occurs.
- Keep batteries from contacting conductive materials, water, seawater, strong oxidizers, strong acids and flammable materials.
- Excessive vibration, elevated heat and charging Li-ion below 0°C can damage the battery.
- Allow time for cooling before charging a battery that is still warm from usage and using a battery that is





# THE WASTE FRONTIER

Article written by Anita Vejins



**The nature of design and the impact that designers can have upon the world is highlighted by the problem of disposal when the product is no longer needed and discarded.**

Textile waste management is not a new problem but it is one that has largely been ignored until now. The sheer quantity we consume and dispose is now being recognised as a massive problem partly due to fast fashion, over-supply and changes in consumption habits.

## WHAT HAPPENS TO TEXTILE WASTE?

We all need clothes. We buy them, wear them and then need to dispose of them. The options for disposal include donating to charities who sell them, commercial company reuse and poor-quality product is exported and ends up in landfill either here or offshore.

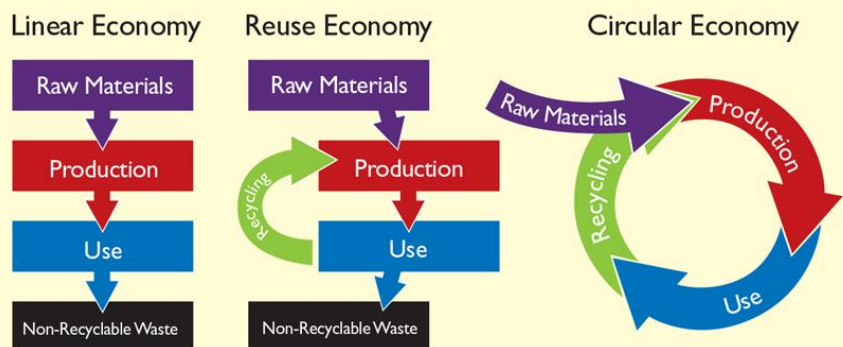
## THE PROBLEM

Fast fashion is churning out cheap clothing which on the surface sounds great. That “bargain” we got is being recognised as a growing problem for the environment.

Traditionally the fashion industry works in a linear manner. The industry’s goal is to transfer this process to zero waste through a circular process. This means a rethink on materials, dyes and chemicals used and at the end of life how the product can be reused, recycled or made into a value added product.

## SOLUTIONS

### From A Linear To A Circular Economy



Source: [www.government.nl/topics/circular-economy/from-a-linear-to-a-circular-economy](http://www.government.nl/topics/circular-economy/from-a-linear-to-a-circular-economy)

*“There is no such thing as ‘away’. When we throw anything away it must go somewhere.”*

**Annie Leonard**  
Proponent of Sustainability  
(1964 -)



- Extend the life of apparel by producing quality items for longevity, buying or swapping used items, rent garments. If an average garment stays in use 3 times longer than today, its carbon footprint is reduced by 65% and its water use by 66%.
- Using textiles that are made from non-toxic materials, are biodegradable, recyclable and ethically produced e.g. wool.
- Developing new textiles such as wood-pulp-based EcoVero™ fibres or ones using paper, milk, seaweed, soy, etc.
- Down-cycling – by mechanical recycling textiles are torn apart for rags, padding or insulation.

- Fibre-to-fibre recycling - mechanically recycling textile fibres to new fibres. Textiles suitable are denim jeans, cotton garments and home textiles, pure polyester garments and home textiles and garments with high wool content. Often these fibres are of lower quality than the original.
- Textile companies e.g. **Blocktexp** (Sydney) use new technology to chemically break down fibres (e.g. polyester, and cellulose) so that they may be reused as high value raw materials in other industries.
- Alternate uses - Fab**BRICK** (France) creates ecological bricks from waste textiles especially cotton T-shirts. These bricks have both thermal and acoustic insulator characteristics that can be used to partition homes, interior design, furniture, and home accessories.
- Research e.g. **QUT's Institute for Future Environments** (IFE) Catapult program aims to transform textile waste into high value-added carbon material for potassium ion batteries.
- Aim to reduce carbon emissions by reducing dependency on imported raw materials.



**FACTS AND STATISTICS (Australia):**

Australia is 2 <sup>nd</sup> largest consumer of new textiles. We buy about 27kg of textiles per head per year	Australians discard 800,000 tonnes of clothing and textiles yearly. Only 15% donated apparel is suited for resale.	23kg disposed per person annually or 15 tonnes discarded every 10 minutes. Less than 1% of textiles recycled.	The textile industry is responsible for about 10% of greenhouse gas emissions and 20% of wastewater production globally.
Over 70% clothing made using manmade plastic fibres. 40 million tonnes of polyester is produced for garments.	Replacing polyester with recyclables would decrease the carbon dioxide emissions by 680 million kg annually.	It requires 2,700 litres of water to make one cotton T-shirt and 3,800 litres of water to make one pair of jeans.	To recycle textiles requires the chemical separation of fabrics back into their base components.

In many ways the waste textile problem highlights the problems that other industries face. The pre-packed furniture trend has the same type of linear cycle as the textile industry. It is made cheaply, easy to transport, easy to assemble, short life-span and easy to dispose in landfill. The textile industry has begun a rethink of its waste problem. How the furniture industry tackles the problem is still to be seen.

**REFERENCES**

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