



Stage 2

Science and Technology - Eco Explorers

Science and Technology outcomes

Material World

ST2-1WS-S questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations

ST2-2DP-T selects and uses materials, tools and equipment to develop solutions for a need or opportunity

ST2-7MW-T investigates the suitability of natural and processed materials for a range of purposes

Physical World

ST2-8PW-ST describes the characteristics and effects of common forms of energy, such as light and heat

ST2-9PW-ST describes how contact and non-contact forces affect an object's motion

Digital Technologies

ST2-3DP-T defines problems, describes and follows algorithms to develop solutions

ST2-11DI-T describes how digital systems represent and transmit data

Learning across the curriculum: 🌱 Sustainability 🖨️

Content

Material World

Materials are used for a specific purpose

Focus question: How do you decide upon which material to use for a particular purpose?

- investigate how the properties of natural and processed materials influence their suitability and use in products, services and/or environments, for example: thermal conductivity

(ACSSU074, ACTDEK013) DesT SciT 🌱

- develop a design solution for an identified need or opportunity, using a variety of tools and materials that considers factors such as sustainability and time (ACTDEK010) DesT 🌱

Physical World

Energy makes things happen (heat, light and electricity)

Inquiry question: How do heat, light and electrical energy make things happen?

- investigate the behaviour of light, for example: (ACSSU080) SciT

- shadows resulting from interruption of light by an object

- describe the effects of heat energy

- explore ways that heat can be transferred due to conduction (ACSSU049) SciT

- explore some common sources and uses of electrical energy and describe different ways electrical energy can be generated sustainably, for example: (ACSSU219) 🌱

- solar cells

- hydroelectric power

- wind turbines

- geothermal power generation

- wave power

Forces and energy in products and systems

Focus question: How can we use forces and energy in a product or system?

- investigate how forces and materials interact in a product or system to perform a function (ACTDEK011)


ComT SciT SysT ⚙️

Digital Technologies

Digital Systems and the transmission of data

Focus question: How do digital systems share information and instructions?

- identify and explore a range of digital systems and peripheral devices. (ACTDIK007) ComT DesT SysT 🖨️

- explore how digital systems transmit different types of data. ComT Syst
- investigate digital and information systems, and explore how they meet personal, school or community needs. SciT 

Program Description

Students will be introduced to a variety of issues connected to everyday life including the sustainability of energy and building design. Focus on light, heat and electrical energy and developing their understanding of energy as a resource that can be generated and transferred. Students will have the opportunity to explore examples of digital systems and how they transmit data.

The program will include:

PowerPoint Introduction.

Discovery activities including:

- Energy: the story of energy and future energy sources.
- Ways of producing electricity (solar, wind, hydro, geothermal, waves, tidal, nuclear)
- Hydro Power
- Model wind turbines to generate electricity
- Using solar panels to generate power including cooking using a solar oven
- Solar Eco House: Design and test various materials in sustainable house construction.

Students will be using specialised equipment for various activities.

A typical schedule would be as follows:

- Introduction - 10am
- Morning Tea
- Discovery activities
- Lunch
- Discovery activities
- Conclusion 2pm

This program is delivered over 4hrs and for a maximum of 90 students.

The program is suitable in all weather conditions.

Location

Wetlands Environmental Education Centre (WEEC) located at Hunter Wetlands Centre, 412 Sandgate Rd, Shortland, Newcastle. Please use School entry.

Site Description

Wetlands EEC is located at Hunter Wetlands Centre. Wetlands EEC have a purpose built education centre including theatre, wet room and classroom.

The WEEC is a NSW Department school and staff are trained DoE teachers specialising in Environmental Education

Excursion information

What to bring: Printed workbook, clipboard and pencil, recess and lunch, refillable water bottle, hat, sunscreen, covered walking shoes plus any special requirements of the group. (Wet weather gear when necessary). Non-aerosol insect repellent is advisable.

WEEC teachers rely on the participation of visiting teachers to meet recommended supervision levels. Visiting teachers are ultimately responsible for behaviour of students, students with existing medical conditions or special needs.