



EARLY STAGE 1

Sonny the Sustainability Scout Schools Challenge

Contents/ Overview

STAGE 2 - SCIENCE AND TECHNOLOGY	3
- Summary	
- Unit Overview	
- Goals	
- Strategies	
- Outcomes	
- Assessment Overview	
ACTIVITY ONE - BUILD A RAIN GAUGE AND LEARN ABOUT THE WATER CYCLE	4
ACTIVITY TWO - SUSTAINABLE MATERIAL SCAVENGER HUNT	5
ACTIVITY THREE - SONG AND DANCE	6
ACTIVITY FOUR - LET'S TALK RUBBISH	7
ACTIVITY FIVE - HOW DO WE USE WATER	8
ACTIVITY SIX - LITTER DETECTIVES	9
ACTIVITY SEVEN - ENERGY BASICS	10
ACTIVITY EIGHT - FOOD WASTE IS WASTING FOOD	11
ACTIVITY NINE - LITTER FREE LUNCH AND HEALTHY WATER BOTTLES	12
ACTIVITY TEN - SUSTAINABLE CRAFT ACTIVITY	13





Science and Technology

EARLY STAGE 1

This unit provides opportunities for students to work mathematically in collecting, analysing and representing data. Students use literacy skills in interviewing, collaborating and communicating proposed water, waste and energy efficiency strategies. The unit integrates Early Stage 1 outcomes and content from the Science and Technology K-6 Syllabus.

Duration (recommended): 10 x weeks (1 x lesson per week)

This unit draws on strategies and resources contained in the K-6 Syllabus.

Unit overview

In this program, students will engage in a range of opportunities to develop and practise their research, analysis, and communication skills, with a particular emphasis on identifying water, waste and energy efficiency strategies. Students will engage in a range of activities about sustainability, the world's resources and communicate questions, opinions and information in relation to the things they have learned about.

Goals

Through studying this integrated Science and Technology and Geography program, students explore scientific and technological concepts and gain knowledge and understanding of the world. They develop skills in conducting scientific investigations and designing and producing solutions through learning about the Living World, Material World, Physical World, Earth and Space, and Digital Technologies.

Strategies

Physical World: What are the different forms of energy around us and how can we detect them?

Living World: What are Earth's resources and how do we use and care for them?

Digital Technologies: Use digital technologies to record and communicate findings.

Outcomes

STe-1WS-S - Observes, questions and collects data to communicate ideas

STe-2DP-T - Develops solutions to an identified need

STe-3LW-ST - Explores the characteristics, needs and uses of living things

STe-4MW-ST - Identifies that objects are made of materials that have observable properties

STe-5PW-ST - Observes the way objects move and relates changes in motion to push and pull forces

STe-6ES-S - Identifies how daily and seasonal changes in the environment affect humans and other living things

STe-7DI-T - Identifies digital systems and explores how instructions are used to control digital devices

Assessment overview

Evidence of student learning can be gathered through:



- Activities engaging students in the use and conservation of Earth's resources
- Activities engaging students in identifying water, waste and energy efficient strategies
- Activities engaging students in identifying water, waste and energy terminology
- Students ability to communicate their findings

SKILLS FOCUS:

Working Scientifically - Processing and analysing data, and communicating

Design and Production - Identifying and defining, researching and planning, producing and implementing, testing and evaluating

ACTIVITY ONE - BUILD A RAIN GAUGE AND LEARN ABOUT THE WATER CYCLE


Content	Teaching, learning and assessment	Resources
<p>STe-1WS-S - observes, questions and collects data to communicate ideas</p> <p>STe-6ES-S - identifies how daily and seasonal changes in the environment affect humans and other living things</p> <ul style="list-style-type: none"> • Early Stage 1 Earth and Space – use and conservation of Earth's resources • identify and explore the use of a variety of Earth's resources including water and soil (ACSSU032)  	<p>Once we use water, it is never really gone. It just changes its form as it moves around the Earth, into the atmosphere and back down to Earth again. Nature's way of recycling.</p> <p>Water forms, dissipates, and forms again in a cycle called the water cycle. Being a cycle there is no start and end, however for the purpose of these activities let's start at the collection point – or the Earth's oceans which cover three-quarters of Earth.</p> <p>This activity is all about solidifying the basics of the water cycle:</p> <ul style="list-style-type: none"> • Collection • Evaporation • Condensation • Precipitation <p>First, we will focus on water collection by building a rain gauge:</p> <p>Students will work as pairs for this activity.</p> <ol style="list-style-type: none"> 1. Use number counting blocks the same size to mark measurement lines on a container that are the same distance apart. For example, mark 5cm, 10c, 15cm, 20cm etc. Place a funnel into the opening of the container. 2. Put the gauge out for water collection and monitor it each day. Record the daily findings in the rain gauge activity sheet, and notice when water is collected and how much, and then how much evaporates. 3. Discuss rainfall and the Tamworth region's climate. <p>Second, students are going to act out the water cycle.</p> <ol style="list-style-type: none"> 1. Each student picks a card from a pile, make sure you don't show anyone what you picked! 2. Students begin acting out the word on their card. Try and do this part of the activity without making any noise. Try and group yourself with other students who you think have the same card. 3. When everyone has found a group, students should sit down. 4. One at a time, the groups stand up and act out the word on their card to the rest of the class. The other students try and guess what their word from the water cycle is. <p>Think about what you have learnt in this activity. Teachers will use the two feathers and a wish structure to guide your reflection. Each pair will share their feathers and wish with the class, and the teacher will record them in the sheet.</p> <div data-bbox="779 1374 1285 1449">  </div>	<p>Activity Sheets 1: Build a Rain Gauge</p> <p>Activity Sheet 1: Water Cycle Charades</p> <p>Teacher Answer Sheet 1: Two Feathers and a Wish</p>

ACTIVITY TWO - SUSTAINABLE MATERIAL SCAVENGER HUNT

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 of the Material World strand Students investigate how the properties of materials determine their use in design solutions while introducing students to the material sciences and design thinking.</p> <p>STe-4MW-ST - identifies that objects are made of materials that have observable properties</p> <p>Students:</p> <ul style="list-style-type: none"> Identify and describe how the properties of different materials suit their design purpose Plan, design and evaluate a product considering an identified need or opportunity. <p>Digital technologies: STe-7DI-T</p>	<p>Discuss and explain with students that materials are made into things we can touch. These are called objects. Objects have a job to do, or a purpose, and they need to be made from materials that can do that job. Watch the 'Materials and their properties' video.</p> <p>Students will go on a scavenger hunt around their home or school to find familiar objects which are made from the materials of wool, plastic, metal and fabric. They record their answers in the student activity sheet.</p> <p>Ask students some funny questions about materials, objects and their purpose. For example; Would you use paper to make your shoes? Would spaghetti make a great belt? Do you own a metal jacket? Is your computer made from wool? Why not? Have student give reasons for their answers.</p> <p>Discuss the properties of sustainable/recyclable materials, and the challenges of non-sustainable materials. The properties of sustainable materials include the materials being durable, reusable or recyclable. As a class, discuss each of these terms and think about some materials that fit under each category.</p> <p>Timber can be sustainable if it is sourced from special farms that grow trees specifically for this use. Timber can also be salvaged and re-used. Unsustainable building materials are made from things that cannot be replenished, for example plastics which are made from fossil fuels. However, some of these products can also be recycled. Recycling is how we take rubbish or waste products and transform it into new products.</p> <p>Some items which can be recycled include:</p> <ul style="list-style-type: none"> Plastics Metals Electronics Textiles Cardboard <p>Students use the information and knowledge they have gathered about sustainable/recyclable materials to design a chair for their favourite toy to sit on.</p> <p>The chair must meet the following criteria and students will discuss as a group whether their design meets these criteria:</p> <ul style="list-style-type: none"> What sustainable/recyclable materials will make this chair What is the toy, and is the chair big enough for the toy to fit 	<p>Activity Sheet 2: Sustainable Material Scavenger Hunt</p> <p>Activity Sheet 2: Design a Chair</p> <p>Materials and their properties video; www.youtube.com/watch?v=340MmuY_osY</p> <p>Some examples of sustainable building materials include:</p> <ul style="list-style-type: none"> Straw Whiptail Strawbale House - Sustainable House Day 2020 - YouTube Rammed earth Rammed earth YourHome





ACTIVITY THREE - SONG AND DANCE

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 The Earth's Environment – use and conservation of Earth's resources</p> <ul style="list-style-type: none"> Plan and implement strategies considering conservation of resources to address sustainability and to meet personal and/or community needs, for example: (ACTDEK001) <p>DesT SysT </p> <ul style="list-style-type: none"> Turning off dripping taps Turning off unnecessary lights Reusing/recycling campaigns 	<p>Show students the Introduction to Sonny video and learn the Sonny and Skye Song and Dance video.</p> <p>Sing the chorus of the song with students. Encourage them to participate in the song orally and through physical movement by following the moves in the video.</p> <p>Following the song and dance session, engage in class discussion about some of the ways we can be sustainable always.</p> <ul style="list-style-type: none"> Like putting boxes and bottles in the yellow bin Turning off the lights for rooms you're not in Making sure your shower is short and sweet Turning off the taps when you brush your teeth <p>Discuss other sustainability initiatives students identify</p>	<p>Activity Sheet 3: Song & Dance</p> <p>Sonny and Skye Song and Dance Videos:</p> <p>https://sustainablesonny.tamworth.nsw.gov.au/watch/</p>

ACTIVITY FOUR - LET'S TALK RUBBISH

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 The Earth's Environment – use and conservation of Earth's resources</p> <ul style="list-style-type: none"> Plan and implement strategies considering conservation of resources to address sustainability and to meet personal and/or community needs, for example: (ACTDEK001) <p>DesT SysT </p>	<p>To form an understanding of the different bins your waste can go into.</p> <p>Objectives:</p> <ul style="list-style-type: none"> To create awareness of what contamination is in a waste context To reduce recycling and green bin contamination To increase recycling knowledge To reduce recyclables ending up in landfill <p>Background:</p> <p>Raising awareness of what contamination is in a waste context can help lead to reduced contamination in the yellow or green bins.</p> <p>If we don't reduce the contamination in our bins, there is potential for whole truckloads of recycling or green waste ending up in landfill.</p> <p>Recycling can be tricky, so it's important to make a conscious choice about what bin we place our rubbish in every day.</p> <p>Understanding what can and can't go in each bin will help reduce our waste to landfill footprint.</p> <p>Activity:</p> <p>Students are to complete the bin contents review activity sheet, by colouring in the items that are in the correct bin and by drawing an arrow from the items in the wrong bin to their correct bin colour.</p>	<p>Activity Sheets 4: Let's Talk Rubbish</p> <p>Activity Sheets 4: Teacher Answer Sheet</p>

ACTIVITY FIVE - HOW DO WE USE WATER


Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 The Earth's Environment – use and conservation of Earth's resources</p> <ul style="list-style-type: none"> Plan and implement strategies considering conservation of resources to address sustainability and to meet personal and/or community needs, for example: (ACTDEK001) <p>DesT Syst </p> <ul style="list-style-type: none"> Turning off dripping taps Turning off unnecessary lights Reusing/recycling campaigns Identify and explore the use of a variety of Earth's resources including water and soil (ACSSU032)  AC SIS014: Responding to questions about familiar objects and events they are curious about in the natural and made environments. AC SIS233: Engaging in discussions about observations and using drawings to represent ideas. 	<p>This lesson involves students classifying water into home and school use, identifying where water is used in a typical day and understanding the need for a clean water supply and to not waste water. The learning sequence involves two activities, designed so teachers can use all or part/s of the sequence best suited to the needs and interests of the class and time available.</p> <p>Part One - Classifying water use into home and school use</p> <ol style="list-style-type: none"> In the classroom, brainstorm all the ways students use water at home and school. Using an IWB device, label and drag pictures under headings <ul style="list-style-type: none"> Using water at home and Using water at school. <p>Ask the students to drag the pictures under the correct heading. Discuss with the class if their placement is correct.</p> <p>Some pictures, like watering the garden, may go in either category (use copy to achieve this on IWB). Write any other water uses the class can think of under the correct headings.</p> <p>Part Two - Use the how we use water sheet to discuss the different ways people use water at home.</p> <p>Discuss how the people are using water wisely by:</p> <ul style="list-style-type: none"> washing the car with a bucket instead of a hose brushing teeth with the tap turned off rather than leaving it running having a short shower (or shallow bath) using the half flush button on the toilet making sure the dishwasher is full before using it (or only filling the sink to cover the dishes needing to be washed) using a trigger nozzle to water plants to control the amount of water and not waste it sweeping up leaves instead of hosing them. <p>Students draw a picture of someone using water wisely in each of the water droplets in the how we use water activity sheet</p>	<p>Activity Sheet 5: How do we Use Water</p> <p>Materials:</p> <ul style="list-style-type: none"> IWB with internet connection or computer and data projector






ACTIVITY SIX - LITTER DETECTIVES

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 Earth and Space – use and conservation of Earth’s resources</p> <ul style="list-style-type: none"> Plan and implement strategies considering conservation of resources to address sustainability and to meet personal and/or community needs, for example: (ACTDEK001) <p>DesT Syst </p> <ul style="list-style-type: none"> Turning off dripping taps Turning off unnecessary lights Reusing/recycling campaigns Identify and explore the use of a variety of Earth’s resources including water and soil (ACSSU032) 	<p>The purpose of this activity is to role play as a ‘Litter Detective’ and conduct a grid search of the playground in a designated area, for example in the lunch area after a break period.</p> <p>Students will participate in small groups, each in a designated area.</p> <p>Depending on the school’s individual space availability, teachers can allocate a defined area per group, i.e., 2m x 2m location, for the students to then investigate.</p> <p>Using the worksheet provided work out whether your school is a high litter, low litter or no litter school and which area has the most litter!</p> <p>Ensure you have the right resources and follow your schools’ procedures to clean up the litter after the activity is completed.</p> <p>Discuss some ways to reduce litter on the playground. Students to share their litter reducing strategies from home.</p>	<p>Activity Sheet 7: Litter Detectives</p> <p>Materials:</p> <ul style="list-style-type: none"> Clipboard or something to lean on Hat and sunscreen

ACTIVITY SEVEN - ENERGY BASICS

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 Earth and Space – use and conservation of Earth’s resources</p> <ul style="list-style-type: none"> Plan and implement strategies considering conservation of resources to address sustainability and to meet personal and/or community needs, for example: (ACTDEK001) <p>DesT Syst </p> <ul style="list-style-type: none"> Turning off dripping taps Turning off unnecessary lights Reusing/recycling campaigns 	<p>Focus: The aim of this activity is to increase awareness about different sources of energy.</p> <p>Objectives: To identify different energy sources</p> <p>Background: We have several energy sources such as coal, wind, oil, solar and gas.</p> <p>Firstly, what are the different types of energy commonly used in Tamworth region households and what are some examples of how this energy is used? Refer to the learning materials guide on Energy sources for help on running this discussion.</p> <p>At the completion of this activity, students should have a basic understanding of the different sources of energy.</p> <ol style="list-style-type: none"> Using the learning material provided, discuss the commonly used energy sources in your typical Tamworth region home and examples of how that energy is used day to day. Students then draw an energy source they might use daily for example electricity, petrol, sun. Students draw the day to day items that they, their family or the school use that require energy. For example, lights, a car, washing machine, mobile phone. <p>Activity using pictures</p> <ol style="list-style-type: none"> Teachers have pictures of all the different types of energy, e.g: wind solar, coal, hydro displayed on the classroom smartboard. Discussion: what energy do you think is better for the environment? Discussion: what energy type is commonly used around your house? i.e.: to run your fridge, your TV, your car, your cooktop. 	<p>Activity Sheet 7: Energy Sources Learning Guide</p> <p>Teacher notes</p> <p>Have pictures of:</p> <p>Electricity – running a fridge, turning the lights on, using the dishwasher, or washing machine, watching television, charging your phone</p> <p>Gas – Gas hot water system, cooking, gas heater, BBQ</p> <p>Petrol, Diesel – driving a car, driving a tractor, school buses, taxi</p> <p>Solar – hot water system, lighting,</p> <p>Wind – fan</p> <p>Classroom Posters:</p> <p>Posters of solar farms, wind turbines, coal mine etc</p> <p>Teachers to discuss these images. What energy is created here?</p> <p>Which is do you think is the best energy option for the environment?</p> <p>https://www.twinkl.com.au/resource/t2-s-015-renewable-and-non-renewable-energy-information-posters</p>





ACTIVITY EIGHT- FOOD WASTE IS WASTING FOOD

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 – The Earth's Environment:</p> <ul style="list-style-type: none"> • Discussion of ways waste can be managed sustainably    	<p>Students make a chart with all the waste they produce in one day. Each student sticks all their waste to a large piece of butchers paper and add up all their waste at the end of the day.</p> <p>Teacher Notes: We are mindful that there are occasions where some students don't have lunch boxes of food and teachers will be aware of students in this situation. This is not about shaming students. If there are cases where students are in this situation, a solution could be to complete this activity as a team.</p> <p>If students have lunch orders, this activity can still be undertaken but it will focus on the waste that lunch orders generate within the school canteen or students could be paired up with a student with a lunch box so that the activity is consistent for the class.</p> <p>Second part of this activity is to consider food waste, as well as packaging waste, as this is an often-overlooked component of waste management.</p> <p>Activity:</p> <ol style="list-style-type: none"> 1. Students watch the <i>Life of the Strawberry</i> video 2. Discuss what happens in the video to the strawberries. Did it have to happen? 3. Ask students for their experiences of wasted fruit and vegetables at home (fruit bowl and fridge disasters) 4. Brainstorm and record what the family in the video could have done differently so the strawberries didn't get wasted 5. Students complete the worksheet <p>Conclusion: students watch the video again and contribute to the class discussion about what their family can do at home to reduce food waste.</p>	<p>Activity Sheet 8: Food Waste is Wasting Food</p> <p>Materials:</p> <ul style="list-style-type: none"> • Butchers paper <p>Additional Resources: https://healthy-kids.com.au/wp-content/uploads/2020/08/FVM2020EarlyStage1LessonTwoReduceTheWaste.pdf</p>

ACTIVITY NINE - LITTER FREE LUNCH AND HEALTHY WATER BOTTLES

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 Earth and Space – use and conservation of Earth's resources</p> <ul style="list-style-type: none"> Plan and implement strategies considering conservation of resources to address sustainability and to meet personal and/or community needs, for example: (ACTDEK001) <p>DesT Syst </p> <ul style="list-style-type: none"> Turning off dripping taps Turning off unnecessary lights Reusing/recycling campaigns 	<p>Students are encouraged to create a personal connection with their contribution to the waste generated at school and what goes to landfill.</p> <p>The purpose of this activity is to create awareness around lunchbox waste and get students to look at ways they can reduce this waste.</p> <p>Some schools or classes may choose to implement the children's suggested changes for a period of time i.e., a one-week challenge and they do a review of the lunchboxes each day on the waste in the lunchbox and discuss the changes and observations at the end.</p> <p>This activity is NOT a look at nutritional value of foods or anything to do with healthy lunchboxes, it is purely to look at the waste being generated from lunchboxes.</p> <p>Notes:</p> <p>We are mindful that there are occasions where some students don't have lunchboxes of food and teachers will be aware of students in this situation. This is not about shaming students. If there are cases where students are in this situation, a solution could be to get students to pair up and review one lunchbox rather than two.</p> <p>If students have lunch orders, this activity can still be undertaken but it will focus on the waste that lunch orders generate within the school canteen or students could be paired up with a student with a lunchbox so that the activity is consistent for the class.</p> <p>Steps:</p> <ul style="list-style-type: none"> Discovery Day – Review lunchbox initially to look at the waste that is in the lunchbox (resource Sheet 1) Optional – Implement a class challenge to see if students and parents can help reduce the amount of waste being generated in lunch boxes for a week. <p>Steps:</p> <ul style="list-style-type: none"> Discovery Day – Review lunch box initially to look at the waste that is in the lunch box. (Sheet 1) and consider what a healthy water bottle looks like. Optional – If teacher chooses to implement a class challenge to see if students and parents can help reduce the amount of waste being generated in lunch boxes for a week (optional). <p>Facilitate a class discussion around alternatives to single use plastics. For example, rather than glad wrap or zip lock bags for sandwiches and snacks what else could be used? E.g., Reusable containers or where containers aren't available, foil is a better alternative to plastic wrap. Discuss that rather than buying individual packets of snacks, with individual packaging i.e., Shapes or Tiny Teddy's - urge parents/guardians/carers to buy a large box and place the snack in reusable tupperware containers.</p>	<p>Activity Sheet 9: Litter Free Lunchbox Review</p> <p>Activity Sheet 9: Litter Free Lunchbox</p> <p>Litter Free Lunchbox Challenge A5 flyer</p> <p>Litter Free Lunchbox Challenge A4 poster</p>

ACTIVITY TEN - SUSTAINABLE CRAFT ACTIVITY

Content	Teaching, learning and assessment	Resources
<p>Early Stage 1 – The Earth's Environment:</p> <ul style="list-style-type: none"> • Examination of how environments can be used sustainably e.g. sustainable agricultural, commercial and recreational practices  • Discussion of ways waste can be managed sustainably    	<p>Sustainable patterns of living meet the needs of the present without compromising the ability of future generations to meet their needs. Actions to improve sustainability are individual and collective endeavours shared across local and global communities. They necessitate a renewed and balanced approach to the way humans interact with each other and the environment.</p> <p>Education for sustainability develops the knowledge, skills, values, and world views necessary for people to act in ways that contribute to more sustainable patterns of living. It enables individuals and communities to reflect on ways of interpreting and engaging with the world. Sustainability education is future-oriented, focusing on protecting environments and creating a more ecologically and socially just world through informed action. Actions that support more sustainable patterns of living require consideration of environmental, social, cultural, and economic systems and their interdependence.</p> <p>This activity will be demonstrating how students can repurpose everyday materials to reuse them for good</p> <p>Two step sequence.</p> <p>Part One: Easy recycled toilet paper roll bird feeder</p> <p>What you will need:</p> <ul style="list-style-type: none"> • Empty toilet roll. • Peanut butter. • Bird seed. • String. <p>Instructions: Simply tie the string through the toilet roll, spread the roll with peanut butter and then roll in bird seed – it's that easy. Then find a spot outside to hang it and watch the birds come.</p> <p>Part Two: Toilet Paper Tube Seedling Pots</p> <p>What you will need:</p> <ul style="list-style-type: none"> • Empty toilet rolls. • Scissors. • Soil. • Seeds. <p>Instructions: Cut the toilet paper roll with 4 cuts approximately 5cm long. Gently fold the flaps over. Press down to make flat. Fill the container with soil and plant your favourite plant – something that grows quickly like parsley, oregano, sprouts or beans.</p>	<p>Activity Sheet 10: How to Make a Bird Feeder</p> <p>Activity Sheet 10: How to make a Seedling Pot</p> <p>Materials:</p> <ul style="list-style-type: none"> • Toilet rolls • Scissors • Soil • Bird seeds • Peanut butter • String • Plant seeds, i.e., sprouts or parsley <p>Students are encouraged to bring in toilet paper rolls for these activities.</p> <p>Toilet Paper Tube Seedling Pots Resource: https://www.youtube.com/watch?v=8qq9en5cKlk</p>