

SPRING INTO SUSTAINABILITY

A WOOGLEMAI LEARNING EXPERIENCE FOR STAGE THREE

- ✓ **Integrated Science, Tech and ready for the 2019 syllabus**
- ✓ **Differentiated through scaffolds!**
- ✓ **No Prep! Consider your waste by uploading to Google Classroom**



OUR STUDENTS ARE CARETAKERS OF THE EARTH

This multi-activity pack helps students unpack the science behind sustainability and complements their on-site or school visit from Wooglemai EEC. Driven by learning in a real world context, the following activities are designed to help students think critically about our impact on the environment and how we can improve the way we use the earth's resources.

Life Cycle of a Plastic Bottle

After viewing the youtube clip outlined in the instruction page, students record the production process on a flow chart. They are then encouraged to analyse their data and present a community service campaign to reduce recyclable plastic waste in their class or their school. Detailed ideas are provided to inspire creative solutions!

More Energy

This exercise is a scaffolded approach to designing and implementing the scientific inquiry process. Students are supported as they create an inquiry question, conduct research, analyse results and communicate their findings. An ideal mini-unit that introduces students to the expectations of the 2019 science syllabus.

Sustainable Farm Architecture

In compliance with the new syllabus focus on sustainable food and fibre production, students play the part of an architect and design a waste-free, sustainable urban farm for your suburb. This exercise can be completed individually or in groups and has the potential to be a formative assessment task within a larger research project. As an extension, consider asking students to build models of their farm from recyclable materials!

Syllabus Links

Science

ST3-4WS: Investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence based conclusions and develop explanations.

ST3-14BE: Describes systems in built environments and how social and environmental factors influence their design.

ST3-2DP-T: Plans and uses materials, tools and equipment to develop solutions for a need or opportunity (2019)

ST3-7MW-T: Explains how the properties of materials determine their use for a range of purposes (2019)

Technology

ST3-5WT: Plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints.



LIFE CYCLE OF A PLASTIC BOTTLE

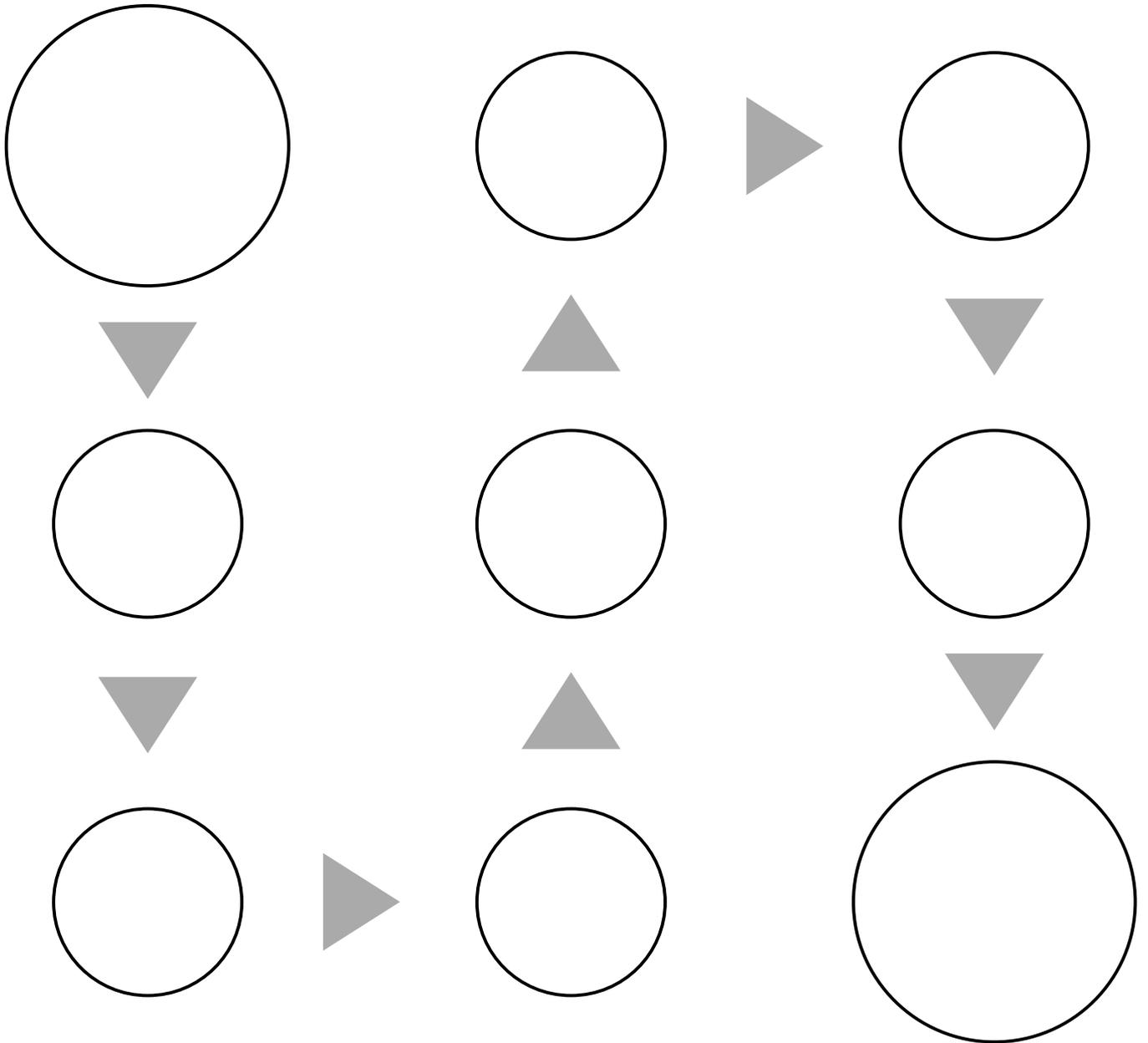
Research the production cycle of a disposable plastic bottle (HINT! Here's a great video to start your journey...

<https://www.youtube.com/watch?v=hgixCJww-PU>).

Record your findings on the flow chart and design a campaign to help people make more sustainable choices and reduce plastic waste in your school.



LIFE CYCLE OF A PLASTIC BOTTLE



CLEVER IDEAS TO RAISE AWARENESS:

- Create a poster on Canva (www.canva.com) and hang it near the canteen and bins
- Get together with friends and make a film. Humour is a great way to get a message to stick!
- Write a letter for your newsletter with a list of suggestions on how to reduce waste
- Make a children's book for Infants classes that explains how to recycle and reduce waste
- Lead by example...younger students will learn by watching what you do!

MORE ENERGY!

How we can use energy sustainably (so there is enough, for all, forever) is at the centre of major debates between politicians, business owners and members of the community. The answer will determine the shape of humanity's future.

Use the template to create an inquiry question and research ONE renewable and ONE non-renewable energy source. Once you have an answer, present your findings. Get creative! You can draw, film, write, design or talk about what you have discovered.



BUT I DON'T KNOW WHAT TO WRITE

Even scientists spend a long time finding the perfect starting place for their inquiry. Answer the questions below to find out what you'd like to learn about renewable and non-renewable energy.

PICK A SOURCE OF RENEWABLE ENERGY:

SOLAR

WIND

GEOTHERMAL

BIOFUEL (PLANT & ANIMAL WASTE

HYDRO (WATER)

PICK A SOURCE OF NON-RENEWABLE ENERGY:

FOSSIL FUEL OIL

NATURAL GAS

COAL

NUCLEAR

WHAT DO YOU ALREADY KNOW ABOUT

RENEWABLE ENERGY SOURCE:

NON-RENEWABLE ENERGY SOURCE:

WHICH OF THESE TOPICS INTERESTS YOU THE MOST:

HOW THEY WORK

HOW THEY AFFECT THE ENVIRONMENT

HOW THEY CAN BE IMPROVED

HOW EXPENSIVE ARE THEY

HOW MANY PEOPLE USE THEM

PICK A TOPIC AND WRITE DOWN WHAT YOU WANT TO LEARN...

THERE'S YOUR INQUIRY QUESTION!

RESEARCH PROJECT: SUSTAINABLE ENERGY

RENEWABLE ENERGY SOURCE:

NON-RENEWABLE ENERGY SOURCE:

MY INQUIRY QUESTION:

MY RESEARCH FINDINGS:

RENEWABLE ENERGY SOURCE:



NON-RENEWABLE ENERGY SOURCE:



SUSTAINABLE FARM ARCHITECTURE

DESIGN BRIEF:

You are an architect working on designing an urban farm for people in your area. You have been asked to reduce the ecological huge environmental impact of food production, while ensuring there is enough for all!

Create a site map and design some solutions to the following problems:

- **Waste**
 - How can the farm reduce:
 - Recyclable paper and plastics?
 - Organic waste?
 - Landfill?
- **Water**
 - How will the farm conserve water and reduce water waste?
- **Energy**
 - How can the farm reduce energy waste and reliance on non-renewable energy?
- **Food**
 - How can the farm create healthy, sustainable food for members of the community?
- **Travel**
 - How can you reduce the number of kilometres the food travels from farm to table?