Watch the N*Gen Episodes!
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Welcome to N*Gen

Season 3!

N*GEN
NEXT GENERATION

Take a journey with us around Africa, as we explore the animal kingdom, test the latest technology and find solutions to climate change! Have you ever wanted to swim with sharks or follow a troop of chimpanzees? Have you ever wondered where electricity comes from or where your "business" goes when you flush the toilet? What exactly is in the air you breathe and the water you drink? Where does our food come from and what does it take to stay healthy and keep the planet alive? We investigate the answers to all these questions and more in the coolest science show in Africa!

On this fantastic journey, we are accompanied by our wonderful presenter Jiji and a host of hilarious cartoon characters who sing and rap catchy tunes about the science you are learning.

N*Gen – the African science show that is opening up your mind to the wonders of the universe. Let's go! Let's know! Let's grow!

Vanilla

Why is processed vanilla worth fifty times more than a raw vanilla pod? Adding value to a raw material combines science, hard work and business sense in equal measure.

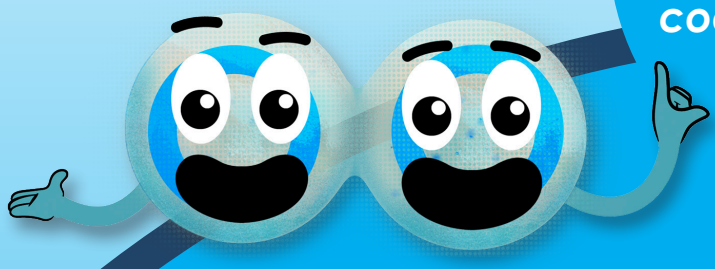
Chimps

Chimpanzees have much to teach us. They compete and cooperate to protect their communities in clever ways. But will they survive contact with humans?

Water

Water is essential for humans to survive, but most water on the planet is not good to drink. How do we make sure our drinking water is pure and clean?

Learn fun facts about animals, technology and the environment, with N*Gen: Africa's coolest science show for kids!



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Clean air

What is air? It's all around us, we need it to live and breathe - but what is it actually made of? And how can we keep it clean?

Sanitation

Humans generate tons of poop every day. But what is this human waste actually made of and where does it all go when it leaves our bodies?

Food tech

All humans use science and technology to improve the food they eat. How does cooking, drying and adding bacteria to food make it tastier, healthier and last longer?

Aquaculture

Fish are delicious and so good for you! Come visit a fish farm and see how we can all eat more fish, without harming the environment.

Clean energy

We use electrical energy every day to switch on our lights and charge our devices. But where does electricity come from and how can we create it without damaging the planet?

Sharks

The lives of sharks and rays affect all humans in the most unexpected ways. Take a journey into the underwater kingdom that is supporting our planet.

Soil conservation

The wonders of science are right under your feet! Learn how soil makes plants grow and how worms work to make soil just right for farmers.

Dairy

How do cows turn grass into milk? And how do we turn that milk into yoghurt and cheese? From cow to cup, we look at the science of dairy farming.

Water
Activity Card

N*GEN
NEXT GENERATION

Fun Fact!
About two-thirds of the Earth's surface is covered with water!

Overview
Reinforce knowledge about safe water sources through drama and science activities

Vocabulary
saltwater, freshwater, vitamins, oxygen, contamination, purification, sanitation, environmental health, microscope, filter, climate change, adaptation

Cross-curricular links: maths, literacy
Life-skills: inquiry, teamwork, cooperation

Learning points
- The sea contains saltwater and freshwater is found in rivers, lakes, rain and underground sources.
- Water helps to move nutrients around our body, flushes out toxins and stops us from overheating though the process of sweating.
- Not all water is drinking water and it is unsafe to drink water that is not both pure and clear.
- Not all clear water is safe as we cannot see the germs and parasites that cause cholera, dysentery, typhoid, and worm infections.
- Underground water from about 50m deep is the safest source, as there is less chance of contamination.
- Climate change caused by humans has lead to shifting weather patterns including more floods and longer droughts. This impacts on the water supply, meaning that some people need to travel further in search of water, it can be harder to grow food and rear animals, and harder to find clean water that doesn't make them ill.
- We adapt to water shortages by managing with less water – e.g. technologies like drip irrigation and water recycling, crops that are more resilient to drought. We can also use less water at home, for example by taking shorter showers.

Main Activity:
TV ADVERT!

This activity would work well in small groups

Resources: Pen and paper; Clock or watch
Extras: Camera or smartphone

Questions:
What different water sources do we have? Can we drink all water? What happens if we drink water that is not pure and clear? How does good hydration help our bodies? How can we use less water?

Watch the N*Gen Water Episode!
youtube.com/@NgenTVAfrica

Warm up:

A tableau is a freeze-frame that tells a story. The actors in a tableau are motionless figures representing a scene from a story. The actors can be characters, objects or substances.

In your groups, create a tableau for each of the following stories:
(give the children 1 minute to arrange themselves into each tableau!)

- friends who have been drinking contaminated water
- family searching for clean water in a changing climate
- person working hard to save water

TV ADVERT:

Now we're going to make a TV advert to highlight the importance of drinking pure and clear water

Ask yourselves:

- What message do you hope to communicate?
- Who is your audience?
- How will your narrative(story) keep their attention?
- Who are your characters?
- What is your setting?

Script-writing - 30-45 minutes

Work in groups to write the script.
Each time the person speaking changes, start a new line:

E.g.: Character 1: "dialogue"
Character 2: "dialogue"

Aim for about two minutes/two pages of content

Rehearsal - 15-30 minutes

Decide on who will be the directors and actors.

Together, help the actors to rehearse their parts of the script.

Think about what objects or props you might need, and which direction the actors should face (towards the real or imagined camera).

Recording / performance - 15-30 minutes

If recording, the group will also need a camera-person.

They could film the advert, then watch and edit or reshoot.

If not recording, each group could take it in turns to perform their advert to the larger group.

Shorter activity:

Thirsty Plants – salt water v fresh water

- Plant two seeds in pots of the same size.
- One plant will be watered with water mixed with salt, and the other with fresh water.
- Label your pots so that you don't get them mixed up!
- Each day, water your plants with the same amount/volume of the water type that matches the label.
- Note down your observations.

What does this tell you about plants and water?

N*GEN
NEXT GENERATION

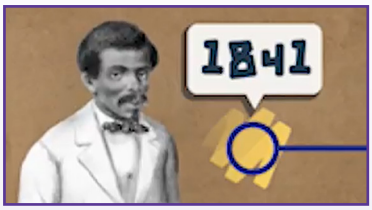
Vanilla Activity Card

Overview

Reinforce knowledge about farming and value chains through an enterprise project

Vocabulary

crop, harvest, product, profit, value, value chain, investment, pollination



Learning points

- farmers often need to add value to their crops before they sell them
- we can add value to items by investing time, energy, knowledge and ideas
- vanilla is worth 50 times more when it is processed than when it is raw
- vanilla is originally from Mexico, where it was pollinated by a certain type of bee
- vanilla flowers only open once each season, and pollination can only happen on this day
- vanilla beans should be washed, chopped and dried. Traditionally beans are cooked and dried in sun. Then water content is checked before sold
- a value chain is series of tasks that add value to an item before it goes to market

Watch the N*Gen Vanilla Episode!
youtube.com/@NgenTVAfrica

Fun Facts!

Farmers pollinate each vanilla pod by hand!

Cross-curricular links

maths, art & design, literacy

Life-skills

creative thinking, cooperation, teamwork, decision-making

Main Activity: Mini Enterprise

This activity could work well in pairs or small groups

Resources: Pen and paper

Extras – if budget allows, the teams could buy the item and the other ingredients in the value chain, and test their enterprise in practice.

Activity

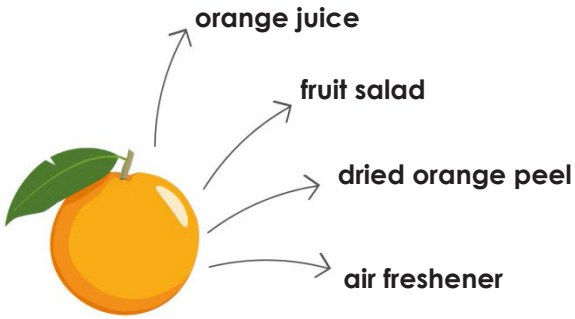
Questions.

- How can farmers make the most of their harvest?
- What helps us to add value?
- Can you think of any examples?
- What is a value chain?

Reinforce knowledge and key terms, using vanilla as an example.

Step 1

Choose an item and gather product ideas
Examples: oranges/other fruit, paper/ magazines, clay, plastic bag



Step 2

Decide on a product and draw the value chain

Step 3

Research how much investment you will need to make at each step of the value chain, and decide on a product sale price that you think makes sense. (Research could be done on a field trip to the supermarket or shopping centre, on the Internet or by asking an expert)

Step 4

Design a colourful poster that clearly shows your product and uses persuasive language or imagery to convince your customers of the value added

If the teams are testing their enterprises in practice, they could run enterprise stalls at a school break time or special event!

Shorter activity:
Paper Chain Value Chains

Resources:
Plain paper Pen / pencil Glue or tape

- Do you remember all of the tasks that add value to vanilla so that it can be sold for a good profit?
- Cut five strips of paper and write one of the following tasks on each strip:
  Dry - grow pod - sweat in sealed container - package - dip in boiling water
- Turn your strips into a paper chain, being careful to make sure that they are in the correct order of the vanilla value chain!
- Do they match your friend's chain?
- Can you create a paper chain value chain for another item?

dry

grow pod

sweat in sealed container

package

dip in boiling water

Chimps Activity Card

N*GEN NEXT GENERATION

Overview

reinforce knowledge about chimpanzees by making a board game

Vocabulary

primates, deforestation, habitat, national park, tracking, hierarchy, patriarchy, matriarchy, instinct, research, sample, parasite, zoonotic disease, endangered, extinction, population

Fun Facts!

Gorillas build their nests on triangular platforms!

Cross-curricular links

maths, literacy, art & design

Life-Skills:

creative thinking, cooperation, teamwork, inquiry

Learning points

- Chimpanzees live in the forests of central Africa, including Tanzania's Gombe National Park.
- Chimp communities are usually led by an alpha male - this is a patriarchal structure.
- Chimpanzees sleep in nests, which they make in different locations every day. The alpha male in the chimp community decides where the group will rest.
- Chimpanzees can be tracked by looking for signs including prints, poo and remains.
- Chimps are vulnerable to many diseases and they can even get diseases from humans.
- If humans don't make efforts to protect chimpanzees, its likely that they will become extinct.
- Chimps are very independent animals, but conservation programmes can help to treat diseases through medication and monitoring.
- Humans should protect and maintain chimpanzee habitats by stopping deforestation.

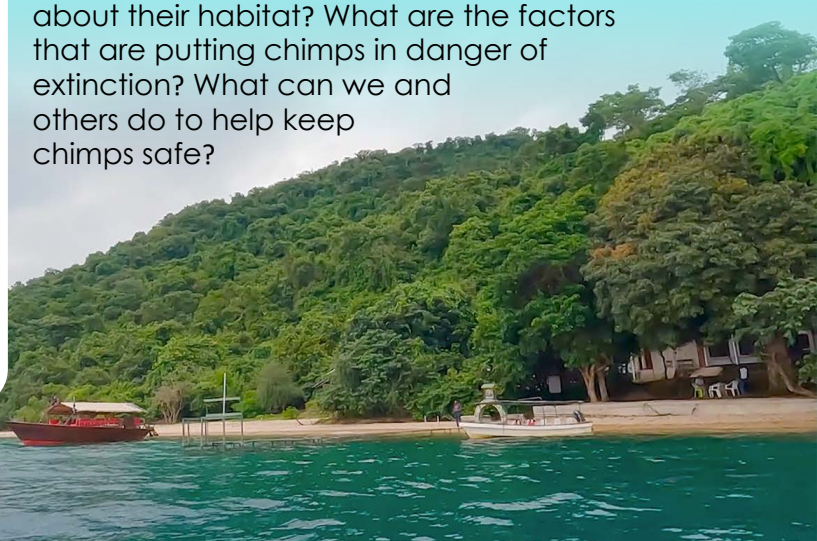
Watch the N*Gen Chimps Episode!
youtube.com/@NgenTVAfrica

Main Activity: Board Game

This activity could work well in pairs.

Resources: Pen/pencil, Paper, Scissors
Extras: Card, Ruler, Coloured pens/pencils, Counters

Questions:
How and where do chimps live? What is special about their habitat? What are the factors that are putting chimps in danger of extinction? What can we and others do to help keep chimps safe?



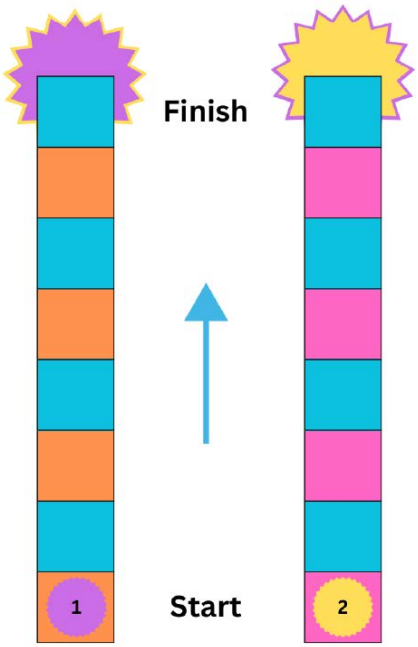
Activity

Let's make a board game to share and strengthen our knowledge about chimps!

Step 1 - Draw - 20 minutes

Draw a grid for your players. The grid needs a start and finish point for each player, and several squares in between. On each square, the player will be asked a question about chimps; if they answer correctly they can move forwards to the next square.

If your game has two players, it could look something like this:



A ruler and coloured pens or pencils could help, but aren't essential.
Making your game out of card could make it last longer, but paper is fine, too.

You'll need to make counters to represent each player - number them so that they don't get mixed up!

You can also use coins or beans as a counter.

Step 2 - Question cards - 30 minutes

Cut question cards from paper or card and add a question to each card, along with the correct answer.

Between you, try to think of 15 questions! Topics could include: habitat, tracking, heirachy, patriarchy, matriarchy, parasites, extinction and population

Question: Can Chimps catch diseases from humans? (decide yes or no)

Answer: No

Question: What is the name for a community led by a woman?

Answer: A matriarchy

Example question cards

Question: How often do chimps make a new nest?

Answer: Everyday!

Step 3 - Play - 20-30 minutes

Play your game! Place the player counters at the start and put the question cards in a pile. Take it in turns to choose a question card for the other player to answer. Read the question to the other player so that they don't see the answer. Each time a player answers correctly, they can move forwards one square. Who will reach their finish square first?

When you have finished, take a look at the cards - can you expand your chimp knowledge by remembering the answers to the questions that you weren't sure of this time...

Step 4 - Adapt - 20-30 minutes

You could make your game more challenging by adding some more instructions for players. The instructions could be on the grid or on the question cards. Instructions could relate to whether or not the player answers the question correctly, and might include:

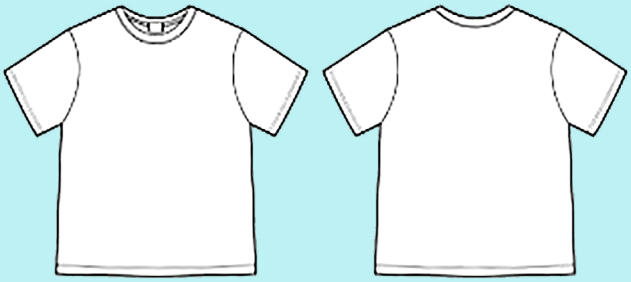
- miss a go
- go backwards one square
- take another turn
- go forwards two squares

Does this make your game more fun?!

Shorter activity
T-shirt design

- Design a T-shirt that raises awareness about an issue relating to chimpanzees.
- Will you add photographs, illustrations and/or text?
- Think about where you place these features on your design for maximum impact.

Resources: Paper, Pen/pencil



Clean Air Activity Card

N*GEN
NEXT GENERATION

Overview

Reinforce knowledge about air quality through Art and Design and Math!

Vocabulary

Gas, carbon dioxide, pollution, particles, air quality, evidence, measurement, fuel, diagnosis, catalytic converter, recycling

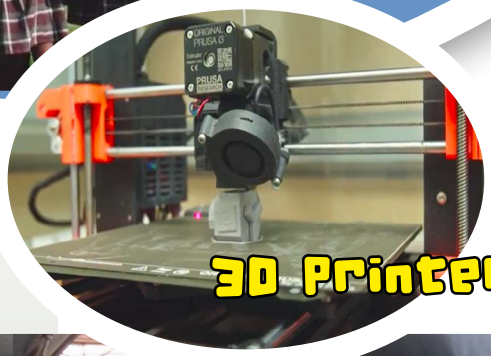
Learning points

- Our bodies need air to stay alive
- Air contains a combination of different gases/elements
- Some gases in the air are better for us than others
- There is too much harmful carbon dioxide in the air as a result of burning rubbish, factory smoke, cooking with charcoal/firewood and vehicle emissions
- Air quality can be measured using an air quality monitor, which contains a motherboard and air quality sensor, to count particles in air and provide a measurement of air quality
- A catalytic converter can be fitted to vehicles in order to clean up harmful gases from the engine before they are released into the air
- Oxygen is O2 and Carbon Dioxide is CO2
- It's good to use buses, and even better to travel by bicycle.

Watch the N*Gen Clean Air Episode!
youtube.com/@NgenTVAfrica

Fun facts

The casing for an air quality monitor is made by a 3D printer!



Cross-curricular links

Literacy, maths

Life-skills

Creative thinking, inquiry

Main Activity: Clean-zine

Resources:
A4 / A3 Paper
Scissors
Pens and pencils
Extras: stickers and stamps

Intro - 10 minutes

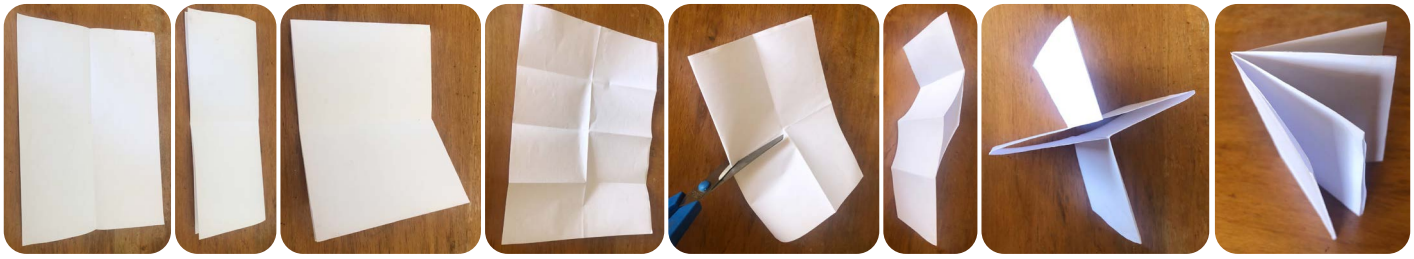
Questions – Why is air quality important? What gases in the air are harmful? What causes poor air quality? What changes can we make our air cleaner?

Make notes that the children can use for reference.
Introduce the concept of the Clean-zine as an eye-catching and interactive booklet that aims to encourage behaviour change in its readers. **Show an example if possible.**

Step 1 - 20-30 minutes

Plan your Clean-zine on scrap paper.
The zine will have 8 pages, including the front and back cover it might help to draw a grid with 8 boxes to sketch out roughly what you will include on each page.
Use the notes gathered in the intro to help you decide on the theme for each page. Zines can be fun and creative way to share information and get your readers thinking!
You could about include pictures, word-games, puzzles, fun facts and tips within your Clean-zine. If you are using A4 paper, remember that each page will be quite small.

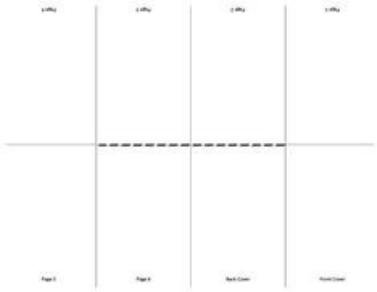
a b c d e f g h



Step 2 - 5 minutes

Form the blank zine booklet using a sheet of A4/A3 paper, first folding the paper into eighths, then cutting across the middle. Follow the images above a-h to see all the steps!

Fold your paper into a zine booklet before you add your designs to the pages, so that your pages are the right way up!



Step 3 - 45-60 minutes

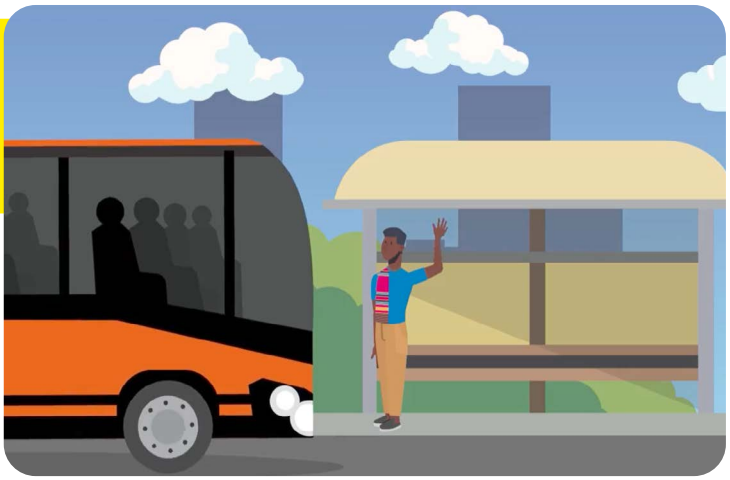
Use the plan that you created in step 1 to fill the pages of your zine.
Remember to create an eye-catching front cover that will inspire your reader to look inside.

Step 4 - 10 minutes

Share your zine! If possible, copies could be made and shared around the school or community to encourage others to make positive choices.
Alternatively, swap your zine with a friend!
To photocopy fold open the magazine again to make a flat sheet of paper.

Activity 2: Travel Maths

Resources:
Pen/pencil + paper



Although buses can release some harmful gases into the air, it is much better for people to travel together in a single vehicle rather than driving multiple cars.

Solve the travel maths below (remember to show how you worked out the answers):
A bus can carry 20 people.

- The employees of a city bank have decided to arrange buses to carry them to their annual meeting in the center of the city. There are 77 employees traveling from a pick-up point in the south of the city, and 63 employees traveling from a pick-up point in the north of the city. **How many buses will the bank need to order in total?**

- Some international employees have been sharing taxis from their hotel to the company office, but they have just noticed that the hotel is on a bus route that will take them straight to the office.

  Until now, the group have been ordering six taxis each morning. Each taxi has three spaces for passengers, and all six taxis have been completely full.
  When the bus arrives outside the hotel in the morning, there are 2 passenger already seated. **Will all of the international employees fit on the bus?**

- Write your own math problem and swap with a friend!

(Answer for question 1 = 7 buses)
(Answer for question 2 = yes)

Food tech Activity Card

N*GEN
NEXT GENERATION

Overview

Reinforce knowledge about food tech by making a collaborative cookbook

Vocabulary

nutrition, nutrients, vitamins, fibre, protein, processing, certified, germination, climate change, edible, raw, digestion, food technologist, acidity, alkalinity, bacteria, ingredients, natural, artificial

Fun Facts!

Soya beans can be turned into many different products including tofu, soya milk, oil and yoghurt!

Cross-curricular links

maths, literacy, art

Life-skills:

inquiry, teamwork, cooperation

Learning points

- The heat from cooking makes foods soft, safe and tasty so that we can absorb their nutrients as we digest them.
- Other ways of processing food to make it safe and edible include salting, drying, smoking, roasting and fermentation.
- Drying can be a useful way of processing food so that it can be stored for a long time without rotting.
- Raw meat quickly becomes infected with bacteria so it needs to be cooked or processed in another way in order to be safe and edible.
- Some foods contain artificial ingredients, or are over-processed (these foods often have many ingredients)
- A healthy, balanced diet includes plenty of fruit and vegetables, some high fibre starchy foods, some protein, some dairy and a little unsaturated oil.
- Farmers who sell their crops should grow foods from seeds that have been certified (quality checked)
- Climate change is a big challenge for farmers as the weather is unpredictable. Farmers now often grow several different varieties of their crop so that at least some crops will thrive, whatever the weather.

Watch the N*Gen Food tech Episode!
youtube.com/@NgenTVAfrica

Main Activity:

Collaborative Cookbook

This activity could work well as a whole-class project, or in smaller groups

Resources: Pen/ pencil, Paper, Cookbooks, Family members or the internet for reference
Extras: Coloured pens/pencils, Holepunch, String

Questions:

Why do we cook some foods and not others?

Activity

How can we process foods to make them safe to eat?
What are the dangers of not processing foods properly? What does a healthy diet look like? What challenges are facing farmers and how are they adapting?

Let's work together to make a cookbook filled with healthy recipes…

Step 1 - research 20-30 minutes

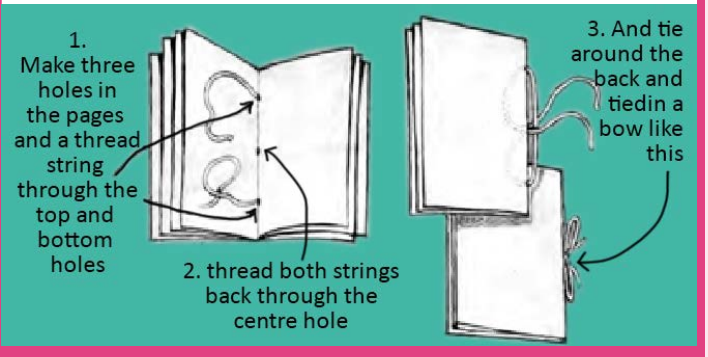
- Use your knowledge about foods to find a recipe that looks healthy and tasty! You can also ask your parents or grandparents if they know a recipe!
- Think about how the ingredients might have been processed, and what food groups they belong to.
- Compare the recipes with your friends or classmates and check that you have a good variety of recipes.

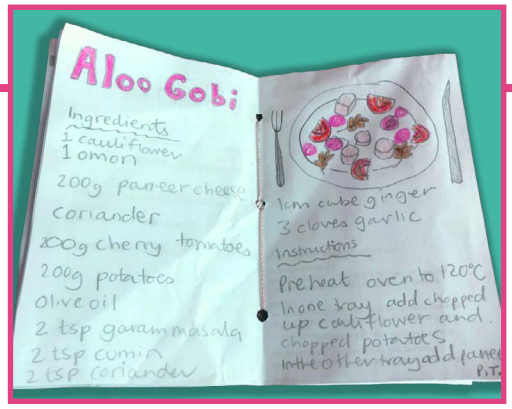
Step 2 - recipe writing 20-30 minutes

- Write the ingredients and instructions clearly on a piece of paper – this will be your contribution to the shared recipe book!
- Check that you have written the correct quantities and measurements and listed all of the ingredients from the original recipe.
- Proof-read carefully to check that the instructions make sense and correct any mistakes (you could swap with a partner if you like).

Step 3 - Decorate 20-30 minutes

- Make your recipe look appealing by adding illustrations that show the ingredients or finished dish!
- Order the recipe pages and bind the book together as shown.





If you don't have string and a holepunch, you could leave the pages as individual recipe cards.

Also Try:

- Work together to add a contents and index page to your recipe book
- Test the recipes at home and write a review!

Shorter activity
Cupboard Comparison

Take three packaged food items from your cupboard or store at home.
These can be foods that are in tins, packets, wrappers, jars or tetrapacks; any foods that list ingredients on their packaging.

Compare the ingredients contained in the three food items to answer the questions below:

- Which foods have been processed?
- Have any of the foods been dried, salted, smoked, roasted or fermented?
- Which food item has the most ingredients?
- Do the foods show a date which they should or must be eaten by? (if yes, which food should be eaten first?)
- Do the foods show which country or region they came from?
- Can you spot which ingredients are natural and which are artificial?
- Do you think any of the foods have been over-processed? (if yes, what makes you think this?)
- Which food do you think it healthiest and why?

This activity could also be done in a shop!

Clean Energy

Activity Card

N*GEN
NEXT GENERATION

Overview

Learn about sustainable energy sources through design and technology.

Vocabulary

Electrical energy, fuel, generator, dynamo, the grid, fossil fuels, sustainable energy, renewable, biomass, biofuel, biodiversity, geothermal energy, solar energy, hydropower

Fun Facts!

Fuel and electricity can be created from the waste products of rice and maize! Rice husks/maize cobs are crushed and baked, which causes them to break down into hydrogen gas, methane gas and biochar.

The filtered gases can fuel an engine, which powers a dynamo, which generates electricity. Biochar is a sustainable alternative to coal, which can be used for cooking.

Cross-curricular links

Literacy, maths, art & design

Life-skills

Creative thinking, inquiry, cooperation, teamwork

Learning points

- Many devices and technologies rely on electrical energy
- The grid shares electrical energy across the whole country using giant generators
- Generators can be powered by fossil fuels, which are turned into electrical energy by the generator's motor. Sustainable energy sources can also be used to power generators
- Fossil fuels - including petrol, diesel and coal - come from the remains of animals and plants from deep underground. Fossil fuels are expensive and bad for the environment, and they are running out
- Sustainable energy - including wind, solar, geothermal and hydropower - is a much better alternative as it doesn't pollute our air, and won't run out. Sustainable energy can also be called renewable energy or clean energy
- Biodiversity is the variety of living things and connections between them

Main Activity: Paper Windmill

This activity could work well in pairs.

Questions. What are the different forms of sustainable energy? Which form uses a windmill or turbine? How does this generate energy?

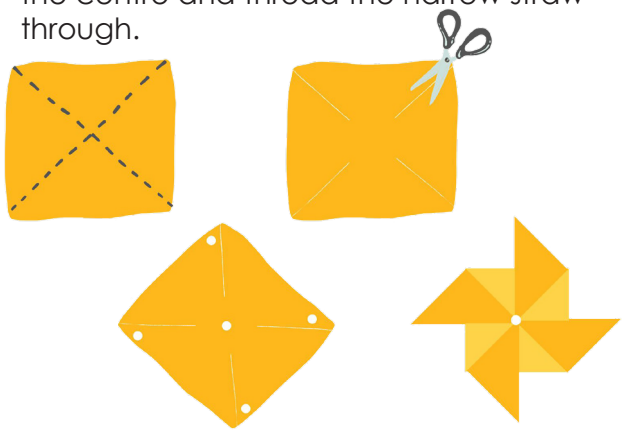
Activity

Paper Windmill Resources:

A4 Paper	Small disposable cup
Pencil	Large disposable cup
String	Narrow straw
Tape	Wide straw
Scissors	Small stones
Ruler	

Follow the steps below or watch the episode to see how to make a windmill!

1. Draw a square that measures 6.5 x 6.5 inches, and cutout.
2. Fold and unfold across the two diagonals.
3. Cut inwards along the fold lines, stopping about 1 inch before the centre.
4. Make holes in one corner of each triangle section and a hole in the middle. The holes should fit the width of the narrow straw.
5. Pull the four corners with holes in into the centre and thread the narrow straw through.



6. Wrap tape around the end of the narrow straw to prevent the paper slipping off
7. Tape the wider straw to the underside of the large disposable cup (this will be the stand for your wind mill!)
8. Put the narrow straw through the wider straw, so that it can spin!
9. Make a hole in each side of the top of the small disposable cup and tie string to each side to make a mini bucket with a handle.
10. Use another piece of string to tie the bucket to the tail end of the narrow straw
11. Place your wind mill outside in the wind and watch it work you can also add small stones to the bucket to see how powerful the windmill is. If there is no wind, you can take a big breath and blow!

Activity 2

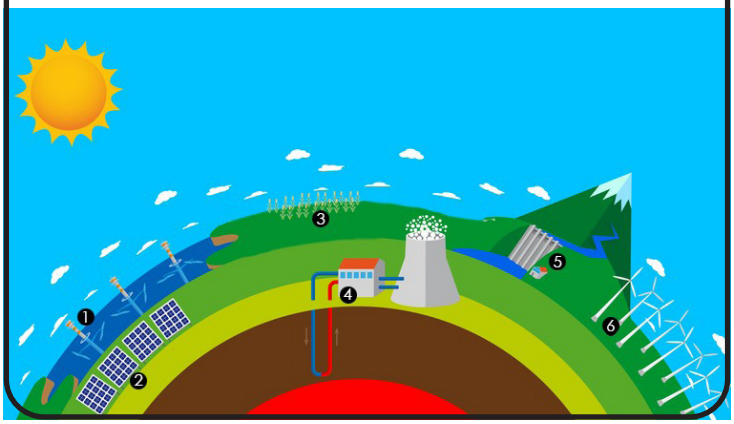
Sustainable Landscape

Resources:
Paper and pen/pencil

Draw a picture of a landscape that is home to many sustainable energy sources.

Think about the geographic and geological features that will make the best location for solar, wind energy, geothermal and hydropower structures. Will your landscape include water or thermal features? Which areas are most exposed and which face south?

Draw on the structures that are needed for each form of sustainable energy.



Activity 3: Word Scramble

Resources:
Paper and pen/pencil

Unscramble each form of sustainable energy and draw an picture to match.

LORSA
DINW
HORMETALEG
PYREHOWDER
FEILOBU

Soil Activity Card

N*GEN
NEXT GENERATION

Overview

Reinforce knowledge about soil conservation via cross-curricular activities

Vocabulary

minerals, soil erosion, top-soil, fertile, infertile, nutrients, conservation, harvest, compost, manure, micro-organisms, decomposition, catalyst, crop rotation, terraces, soil analysis, soil profile, climate change

Fun Facts!

Worms are soil heroes! They help to conserve top soil by increasing air and drainage.

Cross-curricular links

art & design, drama, maths

Life-skills

creative thinking, cooperation, teamwork, enquiry

Learning points

- Top soil is the top layer of earth, which contains the nutrients that help crops to grow well. The more nutrients soil has, the more fertile it is, and the better harvest it can produce
- Soil erosion happens when the top soil is washed away. This is often caused by human activity, including construction and over-grazing
- Heavy rains can also cause soil erosion, and the weather is getting more extreme due to climate change
- We need to practice soil conservation, to make sure that our top soil is fertile for future generations
- compost is created when organic materials - eg. dried leaves, green leaves, stems, cow dung - decompose over time. Micro-organisms feed on the decomposing materials and release nutrients back into the soil, making it more fertile. This means that we can use waste materials in a positive way that doesn't release harmful gases.

Main Activity: Home Composting

This activity could work well in pairs or small groups.

Questions

What is top soil?
Why is it important?
What activities and conditions can harm the quality of top soil?
What impact does this have?
How can we practice soil conservation?

Lets be soil conservationists!

Resources:

- Clear 2ltr plastic bottle with lid
- Soil (from a garden/similar, not a shop!)
- Shredded paper (not glossy!)
- Fruit / vegetable peelings (not citrus or onion!)
- Green grass clippings, hedge trimmings, leaves (without roots + seed-heads!)
- Water
- Spray bottle
- Tape
- Scissors
- Marker pen

Extras:

- Pen / pencil
- Paper

Step 1

Ask an adult to cut almost all the way around the top of the bottle to make the opening wider, leaving the top attached so that it can be taped shut later.

Step 2

Add layers of about 3cm in the following order: Soil Fruit/vegetable peelings Soil Fruit/ vegetable peelings. Soil Shredded paper Soil Grass clippings/leaves.

Step 3

Spray the top layer of the bottle with water.

Step 4

Tape the bottle shut.

Step 5

Draw a line on the bottle to record how far up the bottle the contents reach at the start.

Step 6

Place the bottle in a warm, sunny place. Check your bottle on the same day each week. Draw a line to record how far up the bottle the contents reach each week.

What do you notice?

What has changed?

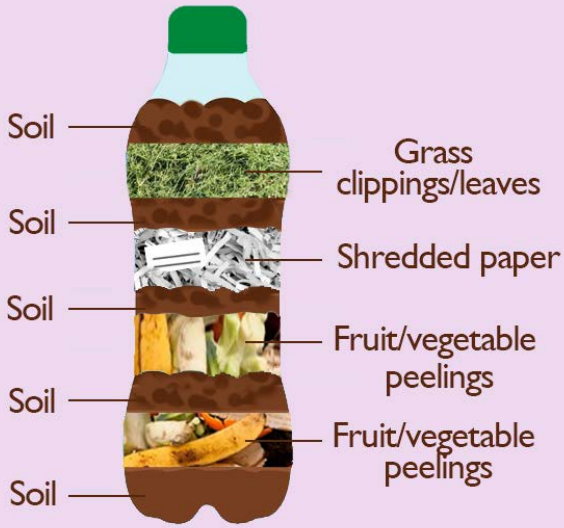
You could photograph or draw the contents of the bottle each week, comparing the images to remind you how much the materials inside the bottle have changed.

After about 8 weeks, the contents of the bottle will usually be ready to use as compost.

Can you explain the science of composting?

Why is composting a positive activity?

Where are you going to spread your compost…?!



Shorter activity
Farm Advisors

Imagine that it is your job to advise farmers on how to improve their harvest.

What questions would you ask them about their land and activities?

(Hints: top-soil, harvest, weather, human activity)

What would your recommendations be for producing a better harvest?

It could be fun to get into pairs and take it in turns to play the role of the farmer and advisor.

Sanitation
Activity Card

N*GEN
NEXT GENERATION

Overview

Learn about sanitation through creative writing and art & design.

Vocabulary

Sanitation, diseases, germs, bacteria, vitamins, digestion, sewage, processing plant, hygiene

Learning points

- Our poo contains germs that carry diseases.
- We can't see germs, so we must wash our hands after going to the toilet and before eating.
- If they can, flies and cockroaches will eat our poo and spread the germs.
- During digestion our bodies take vitamins from the food that we've eaten. The waste product is poo!
- It is very important that poo doesn't enter lakes and rivers as this water might be used for cooking, drinking and farming.
- Sanitation means the systems that are responsible for clean drinking water and safe sewage disposal.
- If there is a sewage system, poo travels through the pipe to a processing plant and is treated with chemicals to remove dangerous bacteria.
- If processed properly, poo can be turned into fertilizer, animal feed or even clean water.

Watch the N*Gen Sanitation Episode!
youtube.com/@NgenTVAfrica

Fun Facts!

Poo smells because chemicals are created when the bacteria inside our stomachs digests our food!

Cross-curricular links

Literacy, art & design

Life-Skills

Creative thinking, inquiry, teamwork

Main Activity:
Poo Poem (Poo-em :)

Resources: Pen and paper

Questions.
What is poo**?** When should we wash our hands**?**
What does good sanitation look like**?**
What are the risks of poor sanitation**?**

This is an important subject to share our knowledge about! Songs, raps and poems can be an effective way to spread awareness, because they are often memorable. Remember Professor Brown's song from the show**?** Now it's our turn to write a poem / song / rap about sanitation!

Activity

Step 1 - Planning - 15-20 minutes

- Let's make a word bank! This will help us collect words and phrases to build our poem / song / rap.
- Poems often contain rhymes, alliteration and repetition.
- Fill your word bank with key vocabulary.
- Do you notice any rhyming words**?**
- Can you connect words that begin with the same letter**?**
- Are there words or phrases that you would like to repeat**?**

Step 2 - Writing - 30-45 minutes

- Expand your word bank into a poem / song / rap.
- Remember that your goal is to share an important message about sanitation
- Aim for three verses. You could give each verse a theme, to organize your ideas.

Eg: Verse 1 – all about poo
Verse 2 – dangers / risks
Verse 3 – good hygiene

It might help to say the words aloud so that you can hear the rhythm.

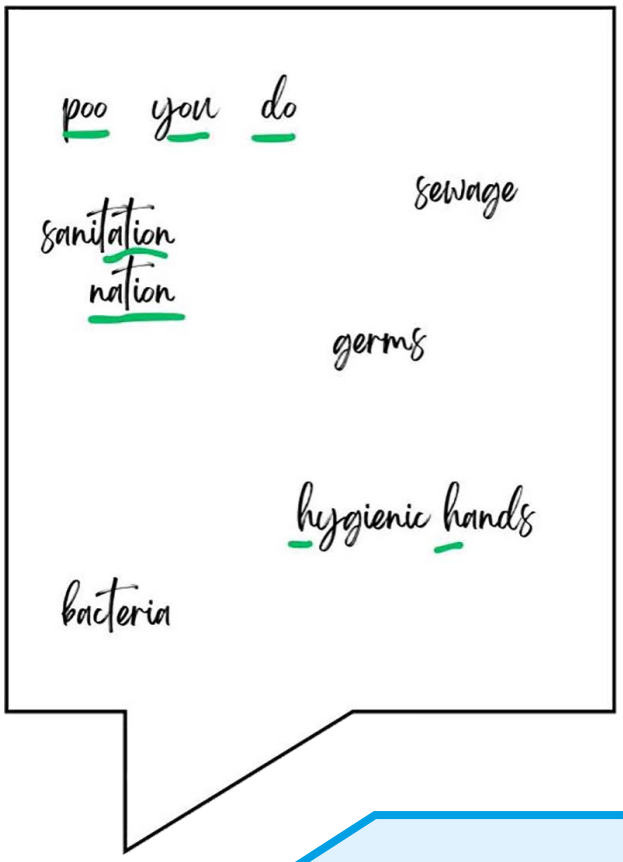
Step 3 - Editing - 10-15 minutes

- Exchange your poem / song / rap with a friend.
- First, look for one feature that you really love and tell them!
- Next, make three suggestions for changes to each others' poems / songs / raps.
- Changes could include word substitutions, adding punctuation, or swapping the order of words or lines.

Swap back and make changes – remember, it is up to the writer whether they prefer to act on the editor's suggestions or stick with their original choices!

Step 4 - Performing - 10-15 minutes

- Again in pairs, read your words aloud. Practise slowing down and saying each word clearly.
- Can you add expression to help get your message across?
- If you are feeling confident, read your work aloud to a larger group!



Activity 2

Poster Design for your company!

Imagine that you are starting an enterprise, selling fertilizer or animal feed made from poo that has been processed to make it safe.

Design a poster to promote your product to new customers.

What information do you need to include**?**

Think about

- an appealing product name
- an eye catching design
- clearly presented product information

N*GEN
NEXT GENERATION

Fish
Activity Card

Overview
Reinforce knowledge about fish including in relation to biology, nutrition and sustainability.

Vocabulary
species, vertebrates, invertebrates, mammals, fertilization, gills, swim bladder, scales, oxygen, bloodstream, oxygen, nutrients, vitamins, minerals, omega-3, vitamin D, trawling, by-catch, overfishing, sustainable

Fun Facts!
A jellyfish is not really a fish! (It doesn't have a backbone)

Cross-curricular links
art & design, literacy

Life-skills
creative thinking, cooperation, teamwork, enquiry

Learning points
- There are 32,000 different species of fish and scientists are still discovering more
- Fish are vertebrates as they have backbones
- Female fish lay eggs, which are fertilized by male fish and hatch into baby fish. This is different from dolphins and whales, which are mammals, and give birth to their young
- Fish need oxygen to survive and absorb oxygen from water into their bloodstream via their gills
- Fish have a swim bladder, which stores gas and helps them to stay buoyant (and not sink)
- Fish are covered in scales, which help them to glide through water
- Fish are affected by pollution
- Eating fish can help to keep us healthy; omega-3 helps our brains to grow and repair and vitamin-D helps our bones to grow and fights disease
- There aren't enough fish to go around, partly as a result of trawling and bycatch – it is much better to fish via sustainable fish farms.

Watch the N*Gen Plastic Episode!
youtube.com/@NgenTVAfrica

Main Activity:
Fish Facts!

[This activity could work well individually or in pairs. The children could even make a single class-fish, by each contributing scales to a large, shared fish.]

Questions:
What makes fish different from whales?
Or jellyfish?
How do fish absorb oxygen?
What else is special about their bodies?
Why is eating fish a healthy choice?
What are the dangers to the fish population?
How could this be improved?

Activity

Let's show our fish facts by displaying them on a model fish!

Resources:

- Card / paper
- Pen / pencil
- Scissors
- Tape

Extras:
Coloured pens / pencils

Step 1:

Think about all of the fish facts you know and turn them into questions and answers. (Different aged children could aim for 3 / 5 / 10 facts / questions). Write the questions and answers down on paper so you don't forget them!

Step 2

Draw a large fish outline on card or paper and cut it out.

Step 3

Cut scales to stick on your fish (cut as many scales as you have questions). The scales need to be big enough to write the questions and answers on. It might help to think of a capital D shape and to draw the scales before cutting!

Step 4

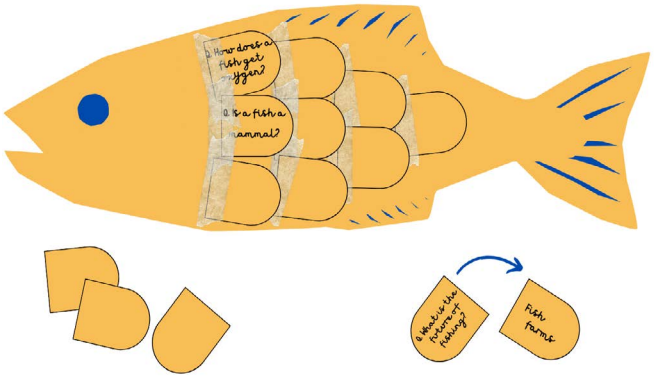
Write a question and answer on the front and back of each scale, and stick the scales to your cardboard / paper fish. Stick them question-side-up, so that they can be folded back to reveal the answer.

Step 5

Draw some more decorations / features on your fish, if you like…

Step 6

Challenge a friend to answer a question! Check whether they are right by folding back the scale. Take it in turns or swap with another pair. Can you remember all of the fish facts?!



Shorter activity - Poster

Design a poster to help educate your community about the health benefits of eating fish.

It might help to focus on:

- Information about nutrition
- An eye-catching design
- Clear and simple text

Where could you display your poster?

Resources:
Paper
Pen / pencil

Extras:
Coloured pens / pencils

Sharks
Activity Card

Overview
reinforce knowledge about marine ecosystems by creating a theatre production

Vocabulary
ecosystem, population, habitat, coral, polyps, skeleton, algae, organism, parasite, food chain, marine protected area, pollution, climate change, endangered

Learning points
- An ecosystem is a network of organisms including plants, animals and minerals working together.
- Marine ecosystems are incredibly important- corals produce half of the oxygen in the Earth's atmosphere and also filter carbon in the sea.
- Sharks are predators at the top of the marine food-chain.
- Most corals get their food from algae that live in the polyps on their branches
- Coral reefs benefit sharks by providing habitat for their food species, shelter and nursery areas for their babies.
- Sharks benefit coral reefs by eating the larger fish. This protects the population of smaller fish, which help to eat the algae and stop the coral becoming smothered. Sharks also help to cycle nutrients and reduce disease.
- Many species of shark and ray are now endangered because they are fished illegally or caught as accidental 'bycatch' in trawler nets. Most sharks and rays produce only a few babies in their life-time, so it is hard for populations to recover.
- Human activities like burning fossil fuel and cutting down trees lead to increased carbon dioxide levels and higher temperatures, causing coral to turn white and die.
- Humans need to plant more trees and reduce fossil fuel use in order to protect the coral reefs and marine ecosystem.

Fun Facts!
Corals are animals – they are related to jellyfish!
Corals are home to 'cleaning stations' where sharks are cleaned by parasites!

Cross-curricular links
drama, art & design, literacy

Life-skills:
creative thinking, cooperation, teamwork

Main Activity:
Stick puppets and theatre show

This activity would work well in small groups.

Watch the N*Gen Sharks Episode!
youtube.com/@NgenTVAfrica

Activity

Questions:

- What is an ecosystem?
- What do you know about the marine ecosystem?
- What is important about coral reefs?
- Why role do sharks play?
- How is human behavior affecting the marine ecosystem and what can we do to solve the problem?

Let's work on a theatre show to share our knowledge about the marine ecosystem!

Resources:

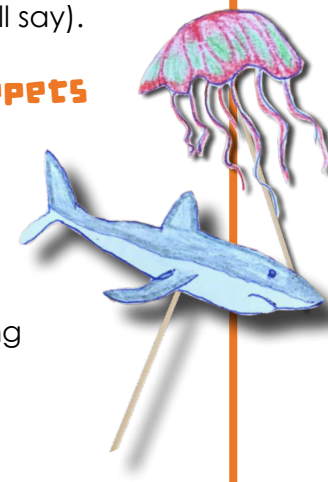
- Paper Pen/pencil
- Card Sticks Tape

Extras: Coloured pencils/pens Glue Collage materials – old magazines, straws, tissue paper, baking foil, big cardboard box, scarf/strip of fabric

Step 1 - write your script - 30-45 minutes

Think about the species that make up the marine ecosystem that we have been learning about; corals, small fish, large fish, sharks, algae and parasites. How could you use these creatures as characters to tell a story? Decide on the characters in your story so that each person in your group will have a puppet to make. It might help to think about a dramatic event that your story might be formed around: e.g. – a shark caught in a trawler net or an increase in water temperature. Once you have decided on how your story will start, peak and reach resolution, you can write down the dialogue (words that each character will say).

Step 2 - make your puppets 20-30 minutes



Draw your character on card, cut out and tape to a stick, so that you can hold your puppet on the theatre stage. Keep it simple or decorate using glue and collage materials.

Step 3 - set the stage 10-15 minutes

You could use a table-top as your stage, hiding underneath and holding your stick-puppets above the table-top so that your audience can see the action. Or, if you have a large box, this could become your theatre (you might need to remove the back panel with help from an adult). You could even add a scarf or piece of fabric to make a curtain for your theatre stage!

Step 4 - rehearse- 20-30 minutes

Take a little time to practice your lines. Think about which side your characters come from and add sound effects of the sea!

Step 5 - perform - 10-15 minutes

Gather an audience and perform your show!

Shorter activity - Action Letter!

Resources:

Pen + paper

Write a letter to your local government to persuade them to decide on more Marine Protection Areas

Think about:

- How Marine Protection Areas will benefit the marine ecosystem
- What could happen if we don't protect marine ecosystems
- How to lay out your letter
- Using persuasive language to make your point

Dairy
Activity Card

N*GEN
NEXT GENERATION

Fun Facts!
A cow has four stomach compartments!

Overview
Reinforce knowledge about dairy farming and foods via cross-curricular activities.

Vocabulary
dairy, paddock-grazing, zero-grazing, processing, digestion, nutrients, vitamins, proteins, minerals, feeding-cycle, silage, manure, fertilizer, pasteurization, bacteria, culture, fermentation, calcium

Cross-curricular links
art & design, literacy, maths

Life-skills
creative thinking, cooperation, teamwork, enquiry

Learning points
- Most of the milk that humans consume comes from cows
- Dairies are where humans process milk to make it safe to eat and drink
- Milk can be made into other dairy products including cheese, yoghurt and ice-cream
- Milk is often pasteurized – this means that milk is heated 90 degrees then cooled to 40 degrees, which removes harmful bacteria and makes it last for longer
- Cows in a zero-grazing system eat special feed, which helps them to produce more milk than cows that are paddock-grazed. Zero-grazing also allows farmers to use land more efficiently, control disease better and produce useful manure
- Grass is hard to digest; and eventually the nutrients contained in grass travel from a female cow's bloodstream to their udders, where special cells combine the nutrients with sugars from the cow's liver to make milk
- Yoghurt is made by fermenting milk with live bacteria (cultures) that produce lactic acid and thicken the milk
- Cows produce methane by burping as part of the digestive process, which contributes to climate. Cows can eat silage(fermented grass), which lasts longer and is easier to digest, leading to less methane

Watch the N*Gen Dairy Episode!
youtube.com/@NgenTVAfrica

Main Activity:
Cow Consequences

This activity would work well in groups of three, but could be adapted for larger or smaller groups.

Questions
- Where does milk come from?
- How does a cow's body make milk?
- What food products do we get from milk and what makes them special?
- How is milk made safe for humans to eat and drink?
- How can farmers increase the quantity of milk that their cows produce?
- What are the benefits of zero-grazing?
- What impact does dairy farming have on climate change?

Activity

Resources:

- Card / paper
- Pen / pencil

Extras:

- Coloured pens / pencils

Each child starts with a piece of paper.

Step 1:

Place your paper in landscape position (so that the long edges are horizontal) and fold it into thirds. Draw a cow's head and neck on the left third of the paper. You could add the cow's features, and even what they are chewing on! Extend the neck across the first fold, so that the position can be seen when the left section is folded back. Fold the left third of the paper behind so that the head is hidden and pass to the friend on your right.

Step 2:

Take the paper from your friend on the left. You won't be able to see the cow's head, but you can use the neck markings to position your cow's body. Draw a body that includes the cow's digestive system and front legs. Extend the cow's belly and back a tiny bit across the next fold. Fold the second section behind the final section and pass to the friend on your right.

Step 3:

Take the paper from your friend on the left. You won't be able to see the cow's head or the front of their body, but you can use the back/belly markings to continue drawing the cow's udder, back legs and tail. When complete, pass the paper to the friend on your right.

Step 4:

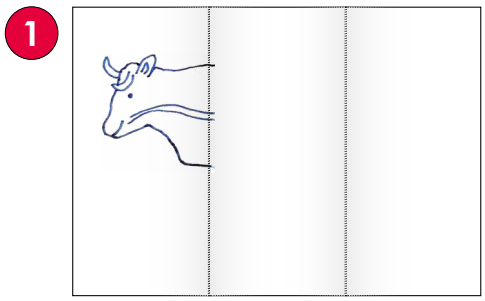
Take the paper from your friend on the left. If you are working in a group of three, this will be the cow that you started drawing, but it doesn't matter if it isn't! Take it in turns to open up the three-part cow drawings, showing your group and noticing your individual drawing styles.

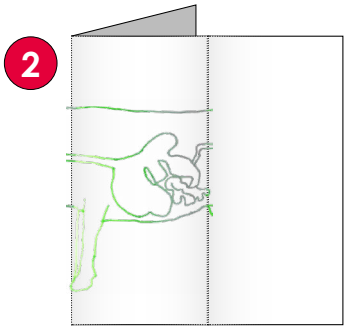
Step 5:

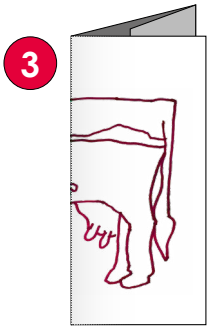
Label the drawing that you have opened up, including important body parts and processes.

Step 6:

Compare your drawing and labels with the friends in your group; is anything missing? Take a moment to fill in the gaps.







Shorter activity
Glossary

Imagine that you are putting together a glossary for a non-fiction book about dairy food and farming. The glossary is the page at the very end of the book that lists the important words about the subject, so that the reader can find out what they mean.

Make a list of all of the words and terms you have learned about dairy foods and farming.

Aim for ten words – if you can think of more, keep going!

Make a second list of the same words; this time write your list in alphabetical order, starting from A.

Leave space to write the definition (meaning) of each word alongside. Try to be as simple and clear as you can when explaining what each word means.

Not sure what a word means? Ask your friend, teacher or research on the internet!