

CARING FOR OUR EARTH

A SCIENCE WEEK INSPIRATION PACK FOR SCHOOLS

Developed by The Ark Children's
Cultural Centre and Professional
Development Service for Teachers
(PDST).

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INTRODUCTION

The Ark and the Professional Development Service for Teachers (PDST) are proud to present this exciting new free resource for teachers in celebration of Science Week 2021.

Created by members of the PDST Primary STEM team along with The Ark's long-standing collaborator Dr Niamh Shaw, who is both a scientist and a theatre artist, this new activity pack is bursting with fresh science and drama inspiration for teachers to use in the classroom.

Designed for teachers, this 'Caring for Our Earth' inspiration pack includes activities, prompts and suggestions intended to bring science to life for pupils alongside a range of integrated creative outputs for pupils through drama and other creative responses.

In our first collaboration of this kind between The Ark and the PDST, together we hope this material will support and inspire teachers to engage with science in new and creative ways during Science Week 2021 - and beyond.

HOW TO USE THIS INSPIRATION PACK

This pack consists of three sections which teachers can use to integrate both Science and Drama for pupils:

SECTION 1: Beings of Earth

SECTION 2: Living on Earth

SECTION 3: Treasuring our Earth

Each section consists of an opening 'Story Spark' which is a short creative story that provides context and an imaginative jumping off point. Teachers may wish to start by reading this story to their class before embarking on the Science Design and Make activity that follows. Each Design and Make activity follows the four-step process: Explore, Plan, Make and Evaluate.

Following each Design and Make section, there are drama activities that creatively explore the topic of each section further. Finally, each section contains both Supporting and Extending suggestions on how to adapt the ideas given to suit individual classes.

Teachers do not need to do all the ideas or do them in any particular order. All the ideas presented aim to allow teachers to select the ones they feel would be most suitable for their own class using a 'menu' or 'pick and mix' approach. They can be used as jumping-off points for further exploration of both science and drama in the classroom.

Through research, experimentation and design, scientists are actively trying to solve global issues, whilst artists are trying to shed light and create awareness of these issues. This illustrates to pupils that science, art and society are linked. Teachers are encouraged to make these links throughout.

DESIGNING + MAKING

'Designing and making is a process which draws on the whole curriculum and should be developed in association with and through visual arts, science and mathematics'

(SCIENCE CURRICULUM, 1999, P. 8).

Designing and making involves pupils using and applying their scientific skills and knowledge to practical tasks. Solutions to real world problems can be explored through the design and make process. For example pencil sharpeners and chairs are examples of ordinary solutions to everyday needs. When pupils engage with the design and make process, the four stages of the process are clearly defined:



1 EXPLORING

Pupils engage in structured and unstructured play with **materials** and **objects**. Through exploration and investigations, pupils are given opportunities to bring new knowledge to their designs.

2 PLANNING

This skill involves imagining, planning, designing and drawing an object that they will make using labels to explain their designs. Group work should be encouraged here to facilitate the collective exchange of ideas. Pupils' awareness of time management can be incorporated into the planning process.

3 MAKING

Pupils make what they have designed using a variety of skills such as cutting, fastening, linking, weaving and using appropriate tools and materials.

4 EVALUATING

Pupils review their work and that of others. They examine how the finished product compares with the original design proposal and test out their ideas. Pupils justify and reason their suggestions for improvement and modifications of their designs.

BEINGS

OF EARTH

STRAND:

LIVING THINGS

STRAND UNIT:

PLANT AND ANIMAL LIFE

STRAND:

MATERIALS

STRAND UNIT:

PROPERTIES AND
CHARACTERISTICS OF
MATERIALS

STRAND:

DRAMA TO EXPLORE
FEELINGS, KNOWLEDGE
AND IDEAS LEADING TO
UNDERSTANDING

STRAND UNIT:

EXPLORING AND
MAKING DRAMA

SKILLS:

OBSERVING,
QUESTIONING,
INVESTIGATING,
RECORDING AND
COMMUNICATING



STORY SPARK

Squirrels Siobhán and Sami are great friends. They live in a large wood just down by the river at the base of the mountain with the rest of their squirrel friends and family. Every summer they play and eat nuts together.

As winter approaches and the days get colder and the nights grow longer they know that it's time to build their den

or 'drey' together. After a lot of searching, they have found the best tree in the woods: it's tall and broad with lots of branches and leaves, with lots of nuts on the ground for them to collect too.

Next, it's time for them to select the right place in the tree to build their den. They have climbed the tree many times and have finally selected their favourite branch: it is strong, and wide and has a nice V-shape that will support the twigs and leaves and grass that will

make their den. Siobhán collects some twigs for the den while Sami gathers leaves and grass. Both of them gather lots of nuts.

After many trips up and down the tree to their favourite branch, they finish their den. Now they are ready for the winter ahead. Siobhan and Sami squirrel will have plenty of food. They will be warm and safe during the winter months that are fast approaching.

DESIGN + MAKE

DESIGN A DEN FOR A SMALL ANIMAL.

CRITERIA:

- **Size and animal type:** The animal is no more than 5cm in height and 10cm in length. Pupils can use a soft toy to replicate the small animal. Consider how big the den has to be to comfortably house the animal.
- **Habitat:** The animal lives in a woodland area. Consider what spots in the school grounds would be best to construct the den.
- **Materials:** Use materials from the school environment – what are the best materials to use for the walls? What are the best materials to use for the roof?

DESIGN & MAKE PROCESS:

- **Explore:** Explore a good location in the school grounds for building a den for a small animal (sheltered from wind, rain and other potential weather problems)
- **Plan:** Plan and design the den – draw it out, discuss it with peers – explain the reasoning behind the designs.
- **Make:** Using the criteria and plan, make the den.
- **Evaluate:** Justify and reason why it is the perfect den for the small animal in terms of location, materials and design.

DRAMA ACTIVITY

ASK THE PUPILS TO PICK AN ANIMAL THAT THEY REALLY LIKE, AND ASK THEM THE FOLLOWING:

- Do they normally live on the ground, or in the trees, or in a river, or in a stream?
- Draw some of the key features of the chosen animals and make their outer skin with other clothes or costumes that will help us imagine the animal better.
- Imagine it's summer: what do these animals do in the summer?
- Do they move to a different place in the summer (migration).
- Imagine its winter: do they behave differently in the winter? (hibernation)

MIGRATING ANIMALS:

- This activity can be done indoors or outdoors.
- Divide the space into a summer region and a winter region – dress up the space to appear like Summer or Winter
- Get the class to decide whether their animal moves during seasons (do they migrate) & move them to that region.
- Move the animal dens to their preferred location for summer or winter.

SUPPORTING

SCIENCE

- Pupils construct their den using playdough/Lego/cardboard. They may also construct their design using junk art and share their designs with their peers and teacher.
- Story: "Good Night Little Bear" by Melanie Joyce. Bears are getting ready to go for a long sleep during the winter months and they need a warm, strong, secure den. Can the pupils make a den for the bear using playdough, lollipop sticks, cardboard and cotton wool that will keep him warm and cosy? Or build a den for a small animal character from their favourite story.

DRAMA

ANIMAL ANTICS

- Pupils dress up as their favourite animal.
- They move around the room as if they're that animal.
- They may make the same sounds as that animal.

ANIMAL PUPPETS

- Pupils make a puppet of their favourite animal.
- They may work together to build a set for the puppets.
- They may then create a story and show about animals and their dens and how they prepare for winter.

EXTENDING

SCIENCE

- A storm is coming. How can pupils ensure that their den is secure and does not fall down? What do they need to consider? What parts of the shelter do they need to focus on? How can they make their home stronger? How can they get their materials to stick together?
- When pupils have constructed their design, they can decorate their dens, add furniture or rooms or another floor, using both natural and man-made materials.

DRAMA

GUESSING GAME

- Pupils practice the different sounds that animals make together.
- They write each animal on a small piece of paper and put them in a bowl.
- Someone picks one of the pieces of paper and tries to make the sound of that animal.
- Can the other pupils guess what it is? Keep going until all the sounds have been performed.

ANIMAL COMICS

- Pupils make a book or comic about all the animal families in the class, with drawings and facts that they have learned about each animal.
- Include top tips on best places for these animals to live, what they need to live and how we can take care of them.



LIVING ON EARTH

STRAND:

ENVIRONMENTAL
AWARENESS AND CARE

STRAND UNIT:

PLANT AND ANIMAL LIFE

SKILLS:

QUESTIONING,
OBSERVING,
RECORDING AND
COMMUNICATING

STRAND:

COOPERATING AND
COMMUNICATION IN
MAKING DRAMA

STRAND UNIT:

EXPLORING AND
MAKING DRAMA



STORY SPARK

Plaintown was a town like any other town in Ireland. It had streets and shops, a school, a post office and a town hall. People were happy in Plaintown because they didn't know any other way of living.

But the new town Mayor, Noreen McBride, had just returned from living in a new and modern city in

Denmark, called Greentown. In Greentown, everything made the rivers cleaner, and the animals happier, and because the animals were happy and the rivers were happy, the people of Greentown were happier too.

Noreen decided that Plaintown needed to be happier so she called the Greentown council and asked them to come visit Plaintown to see if they could teach people how to live better. The council of Greentown came and they showed the builders

and designers and families how to make the rivers and animals happier. Soon the people of Plaintown were just as happy as the people of Greentown, and Noreen was very happy indeed.



DESIGN + MAKE

Design & Make: Pupils redesign their dream living space starting with their immediate environment (room/home) for junior classes to local environment (rural, town, village, city) for senior classes.

CRITERIA:
(Co-created with pupils. What would they like to include?)

JUNIOR: (DREAM SPACE - A ROOM IN THE HOME)

- Contain at least one window and a door
- Somewhere in the room to sit or relax
- A location to store...
- A space for playing with...

SENIOR: (DREAM SPACE - A VILLAGE, TOWN OR CITY SPACE)

- Appropriate living quarters (e.g. apartments, estate, single houses)
- A green space for all members of the public to use
- Indoor and outdoor amenities
- Space for public transport and/or safe cycle routes
- Education and shopping facilities



DESIGN & MAKE PROCESS:

● Explore:

- Buildings/streets in the locality.
- Size and shape of buildings
- Who lives in their community (homes in villages, towns and cities) and what are their jobs?
- Who is responsible for building in their community?
- Name the jobs and describe their role. Where can they find out more?
- What materials might be needed to build their "Dream Space"?

● Plan:

Pupils imagine they are a citizen in the community e.g. cyclist, bus driver, shopkeeper, teacher, engineer, architect, landscaper, farmer, builder, doctor, etc.

- They draw a picture/plan of their reimagined living space.
- They may then label the picture/plan.
- Can they draw it from different angles? (birds eye view, side view, oblique for senior)
- Pupils consider what they would like to add/change to their current community space? What do they find helpful/useful/unhelpful?
- How will their new dream space impact the local environment? Are there any rivers, lakes or other habitats nearby that might be at risk from their development? How will they protect them?

● Make:

- Pupils build "My Dream Space" while paying close attention to agreed criteria and materials gathered. Materials explored can range from playdoh, Duplo, construction blocks to a variety of recyclable/non-recyclable materials.
- Did they make any changes to their plan? Why? Why not?

● Evaluate:

- What was the most important thing they learned during this process?
- Has this design sparked any further ideas/questions?
- What would they add/do differently next time?
- What "wowed" them about other designs?

DRAMA

ACTIVITY

WORD ASSOCIATION

- Make two teams.
- Set the clock for 1 min and get each team to write down as many words as they can about one of the following examples - countryside, village, town, city.
- The team with the most words wins.

ALPHABETICAL WORD GAME:

- Each team races to complete a series of words about the environment starting with the letter A and ending with Z. First team to finish wins.

SLIDESHOW

- Break the class into groups of 5-6
- Using some of the words that emerged from the word association game, get each team to make a freeze-frame picture of that word (for instance if you choose the word 'building', the team might recreate how people use a room in that building using their bodies to make these shapes).

THE MAYOR AND THEIR LIVING SPACE SLIDESHOW

- Assign one pupil as the Town Mayor of the town, and another as an interviewer.
- Using one of the words that emerged from reimagining a living space, ask the Mayor to discuss the Living Space, and then refer to a 'slide' (freeze-frame) that describes what they just explained.
- The rest of the team makes a freeze-frame picture of what the Mayor described.
- The interviewer can then ask further questions of the Mayor of what they see.
- Have fun with the exercise e.g. the team can purposely put in unusual shapes which the Mayor has to explain to the Interviewer.



SUPPORTING

SCIENCE

- Limit materials available for use e.g. only use construction block, Duplo, Lego or Play Doh etc.
- Concentrate on a single street space instead of an entire model design of town or city space

DRAMA

FUTURE EARTH SPACE:

- Imagine pupils are living in the future, in the year 2121 - everything is thriving- their rivers are crystal clear, their forests are thick and healthy, and their animals are all living in healthy habitats.
- What would be different about the pupil's house?
- What would their street look like?
- What would their clothes be like?
- Draw some of the new inventions that have helped us to live on Earth better.

EXTENDING

SCIENCE

- Incorporate a price list for available materials and a budget to build town or city Dream Space
- Design a survey to find out from peers what they would like in their Dream Space. Encourage careful consideration of what questions they might ask, possibly limiting to a set number of options.

DRAMA

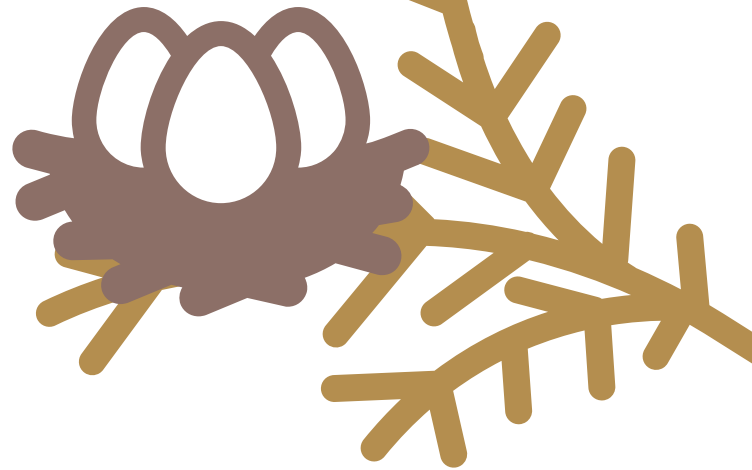
TOWN MAYOR

- Pupils improvise a new town that they have designed together.
- Pick a part for each pupil - architect, builder, homeowner, gardener, everyone who has contributed to make this new town better for our planet.
- Act out together how the new 'Dream Space' came to be.

TREASURING OUR EARTH

STRAND:
ENERGY AND FORCES
STRAND UNIT:
FORCES

STRAND:
DRAMA TO EXPLORE
FEELINGS, KNOWLEDGE
AND IDEAS LEADING TO
UNDERSTANDING
STRAND UNIT:
EXPLORING AND
MAKING DRAMA



STORY SPARK

It was a windy night in the Willow Woods and Chaila Chaffinch was very worried about her three new eggs. The wind was so strong and blowing so hard that the trees were swaying more than usual. A small fire in the grass started to move closer and closer to the trees. From time to time during the night Chaila heard the crack of yet another branch falling to the ground. What if the branch she and her eggs were on were to crack and fall to the ground? Her three new chaffinch babies would never survive. She chirped out many times for help, but no-one came to her aid.

On another tree close by, Eamonn the engineering chaffinch was trying to rest, when suddenly the branch he was perched on snapped and fell to the ground. That was it, he needed to find another safer place to rest for the night. Settling down on the nearby tree, he heard the call of Chaila and found her precariously balancing her nest on a branch that was minutes from falling.

'Hang on Chaila', Eamonn said. 'I have just the thing.' He flew down to his workshop in the tree, and set up a contraption between Chaila's branch and the safer branch that he had found. 'Just hook the nest to the wire and hold on tight!' he said. Chaila jumped on the wire with her nest of 3 eggs and slid down the wire to the safer and

more stable branch. The nest was soon safely resting on the branch with three intact eggs onboard. 'Thank you so much Eamonn', Chaila said. 'That's ok', he said. 'Maybe now we can all get a good night's sleep'.



DESIGN + MAKE

A ZIP LINE TO CARRY PRECIOUS BIRD EGGS FROM A TALL TREE IN DANGER FROM FIRE.

CRITERIA:

(The class can choose their own criteria to challenge themselves!)

Samples could include:

- Length
- Weight of precious cargo
- Landing pad
- Angles
- Must be safe
- Eggs must land without being damaged

DESIGN & MAKE PROCESS (GROUPS):

Explore:

- The force needed to create movement on a zip line.
- The 'best' angle for safe transport of items.
- The 'best' material to use as the wire.

Plan:

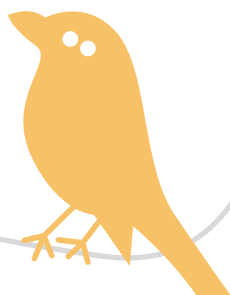
- Draw a plan of what the zip line will look like.
- Label the drawing with materials needed.
- Gather materials.

Make:

Make the zip line. (Try to stick to the chosen criteria. If something isn't working out, adjust the plan first and then modify the zip line.)

Evaluate:

- What did the pupils learn? (Friction? Gravity?)
- Was their zip line successful?
- What would they change if they had to build another zip line?



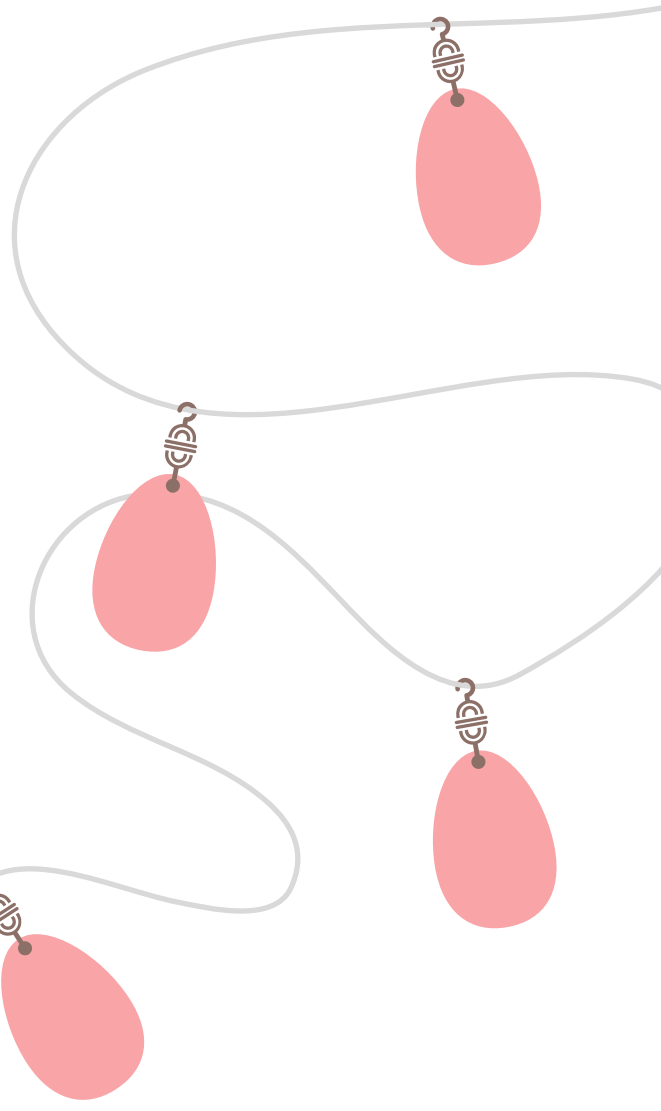
DRAMA ACTIVITY

IMAGINATION GAME:

- Assign one of the pupils as Chaila Chaffinch and all the other pupils as eggs.
- Improvise the eggs in the nest - explore how the eggs and Chaila Chaffinch might feel in the story - initially scared, then challenged to cross the zip line and then joy at being saved and finally safe in a new tree.

WALKING THE LINE (OUTDOORS OR INDOORS):

- Place a long piece of rope on the ground or draw a long line with chalk.
- Pupils imagine they are the eggs as they travel along the zip line - walk along the rope or on the chalk line.



SUPPORTING

SCIENCE

- Reduce the length of the zip line / reduce the weight of the cargo.
- Concentrate on one aspect of the zip line. Make the zip line for the ready-made cargo or make the cargo basket for the ready-made zip line.

DRAMA

FORCES: PUSHING AND PULLING GAME

- Pupils push hard against a wall- explore what that feels like in their bodies.
- Using a solid pillar structure, or heavy table in the room- ask pupils to pull against the structure - explore what that feels like in their bodies.
- Discuss what everyday activities require them to push and pull?
- Act out different places where they push and pull.

EXTENDING

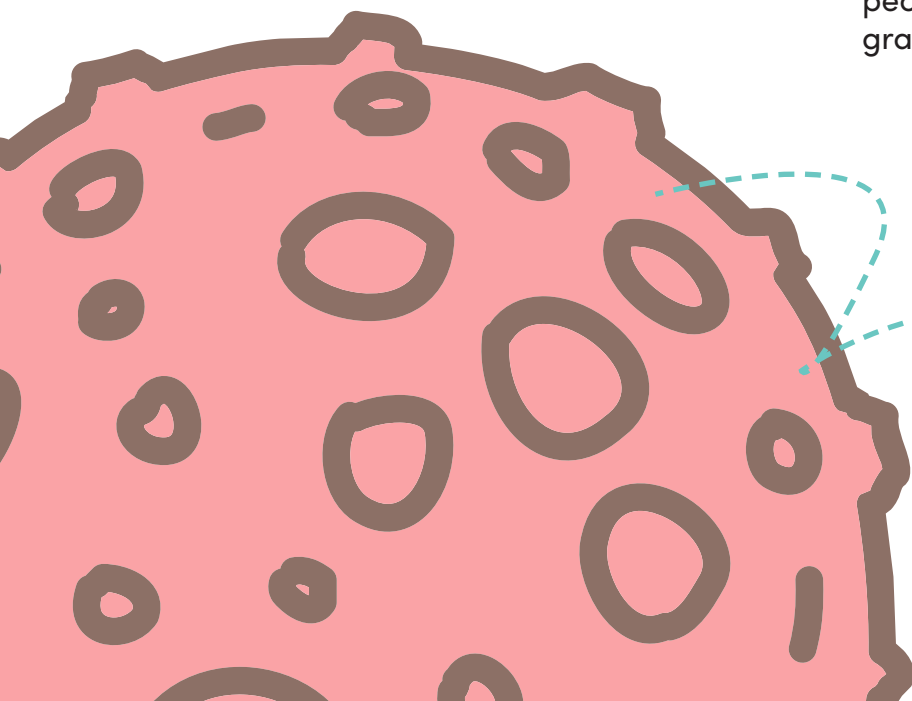
SCIENCE

- Increase the length of the zip line/weight of the cargo.
- Make a pulley system for the zip line.
- Restrict or limit the number/ amount of materials available to make the zip line.

DRAMA

FORCES: GRAVITY

- Pupils improvise together a planet that makes them feel heavier than on Earth (somewhere with a gravity greater than that of Earth).
- They move around the room or outdoor space as if they were on that planet.
- Would they move slower or faster?
- How much energy would they need to move? More or less than on Earth?
- Imagine what that planet looks like. Act out a typical day on that planet.
- Repeat the activity for a planet that makes people feel lighter than on Earth (where gravity is less than that of Earth).



**Written by Dr Niamh Shaw and members
of the PDST's Primary STEM team.**

**Find us on social media at:
The Ark @TheArkDublin
PDST @PDSTPrimarySTEM**

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and
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