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| **Home grown** |
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| Growing seedlings in compostable home-made paper containers. |
| **Subject(s):** Science**Approx. time:** 40 - 60 minutes |  | **Key words / Topics:** * Compost
* Compostable
* Soil
* Plant
* Water
* Grow
* Sunlight
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| **Suggested Learning Outcomes**  |  |  |
| * To be able to describe how to plant a seed and what it needs to grow.
* To be able to plant a seed.
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| **Introduction** |  |  |
| This is one of a set of resources developed to support the teaching of the primary national curriculum. They are designed to support the delivery of key topics within maths and science. This resource focusses on plants and how they grow. Learners will make a compostable plant container, plant and grow a seed. Plants are an important part of our natural environment. We can use our science knowledge to better understand them and hence the environment around us! |
| **Purpose of this activity**In this activity learners will make a compostable plant box and then plant and grow a seed that can later be grown outside.This activity could be used as a main lesson activity, to teach learners how to plant seeds and care for their growth. They will also gain an understanding of what seeds need to grow i.e. sunlight, soil and water. It could be used as one of several activities within a wider scheme of learning focussing on the use of science to understand the natural environment. It could also be used to develop initial understanding of nets (making 3D forms from 2D shapes), contributing to learning in maths. It could also be used to start a discussion on the environment, as the container is biodegradable, whilst many traditional plant pots are made from polymers (which in turn are made from non-renewable oil), which take hundreds of years to decompose. |
| **Activity** |  | **Teacher notes** |
| **Introduction (5-10 minutes)**Teacher to explain that learners are going to plant a seed. Instead of a pot, they are going to use a paper box to plant it in, as this is more environmentally friendly. Teacher to describe what a seed needs to grow i.e. sunlight, soil and water. This could be carried out by a class question and answer approach.**Performing the Activity (20-25 minutes)**Teacher to refresh the safe use of scissors, if required, and demonstrate the steps shown in the presentation to make the paper plant box:* Cut out the box template
* Fold and crease the fold lines
* Cut the corner lines
* Fold up the box sides
* Glue the tabs using a glue stick.

Teacher to hand out equipment needed for the task to learners and learners make their own boxes.**Planting the Seed (10-15 minutes)**Teacher to demonstrate the steps of how to plant the seed into the plant box:* Fill the box about 2/3 full with damp soil/compost
* Use a pencil/stick to push a hole to a depth of 2 cm into the soil/compost and plant the seed in the hole.
* Cover the hole with soil/compost.
* Cover the soil/compost with clingfilm.
* Place the box on a windowsill, on either a plate or a tray.

Learners to then plant their seeds.**Discussing the results of the activity (5-10 minutes)**Teacher to check learner’s knowledge of the process of planting a seed and what a seed needs to help it grow.**Observation**Over the following days, learners should observe the plant boxes until the plant begins to grow to a height of 10 mm. At this stage remove the cling film and transfer the plant to the garden. |  | This activity could be done as individuals or in small groups. The seeds most commonly used are:* Beans typically take 8-10 days to germinate, depending upon the variety.
* Sunflowers, which take 7-10 days to germinate.
* Lettuces, which take 2-10 days to germinate depending upon the variety.

Carrot seeds can take three weeks to germinate, so may be best grown spanning a holiday period (if additional watering is possible, where required).**Home grown** **activity**The cut lines are represented by solid lines, and the fold lines are represented by dashed lines. It may assist to achieve accurate folds if this is done using the edge of a ruler. PVA glue could be used as an alternative to glue sticks, although this may need time to be left overnight to dry before adding the compost. If the glue does not fully support the plant box side tabs, they could be reinforced with sticky tape. However, this is not compostable and should not be placed in the garden. Therefore, when the time comes to transfer the plant box to the garden remove the plant from the plant box and plant separately.When putting soil/compost in the plant box, this should allow some space for the plant to start to grow. Check that the soil is not pushed up against the cling film as this would inhibit growth.Standing the plant box on a plate or tray will protect the surfaces in case the paper disintegrates.When the plant is 10 mm high transfer the compostable plant box into the ground. |
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| **Differentiation** |  |  |
| **Basic** |  | **Extension** |
| Provide a template for the ‘home grown’ plant box pre-cut.Walk through the activity with learners step-by-step, so they complete each stage as it is demonstrated.   |  | Watch the **YouTube** clip – Parts of a Plant: <https://www.youtube.com/watch?v=p3St51F4kE8>, then draw what the plant should look like and identify the main parts of a plant. |
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| **Resources** |  | **Required files** icon-docicon-pdficon-ppt |
| * A4 paper for handouts
* Scissors
* Glue stick
* Soil/Compost/Pack of seeds
* Water
* Pencil or small stick
* Clingfilm
* Sticky tape
 |  |  Teacher presentation – Home grownicon-pdf Home grown- box template handout |
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| **Additional websites** |  |  |
| * **BBC Bitesize** – What does a plant need to grow: <https://www.bbc.co.uk/bitesize/topics/zpxnyrd/articles/zxxsyrd>
* **YouTube** – Parts of a Plant: <https://www.youtube.com/watch?v=p3St51F4kE8>
* **YouTube** – How do Plants Grow: <https://www.youtube.com/watch?v=89QRrnnYPNw>
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| **Related activities (to build a full lesson)** |  |  |
| **Starters** (Options) * Discuss the importance of plants to the natural environment.
* Watch **BBC Bitesize** – What does a plant need to grow: <https://www.bbc.co.uk/bitesize/topics/zpxnyrd/articles/zxxsyrd>
 | **Extension** (Options)* Watch the **YouTube** clip – Parts of a Plant <https://www.youtube.com/watch?v=p3St51F4kE8> then draw what the plant should look like and identify its main parts.

**Plenary*** Discuss the process of planting a seed and how to care for the plant. What are the key ingredients to help a seed grow?
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| **The Engineering Context** film |
| * Environmental engineers are tasked with improving the quality of the natural environment around them. The more they understand about this, the better they can do their jobs.
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| **Curriculum links**  |
| **England: National Curriculum**ScienceKS1 Plants:* identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
* identify and describe the basic structure of a variety of common flowering plants, including trees
 | **Northern Ireland Curriculum**KS2 – The world around usInterdependence:* how do living things survive.
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| **Scotland: Curriculum for Excellence**SciencesBiodiversity and interdependence:* SCN 0-03a
 | **Wales: National Curriculum** ScienceKS2 – Interdependence of organisms* the environmental factors that affect what grows and lives in those two environments, e.g. sunlight, water availability, temperature.
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| **Assessment opportunities** |
| * Oral teacher feedback, whilst the seed is being planted, to confirm knowledge of what a plant needs to grow.
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