Subject: Science
Year 2: Making Connections- Eco-friendly choices
NC/PoS:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.

Prior Learning (what pupils already know and can do)
'Materials: Uses of everyday materials' unit- see Kapow

End Goals (what pupils MUST know and remember)

- Know objects with the same use that are made from different materials.
- Know materials that are used to make objects with different uses.
- Know that stretching, twisting, bending and squashing can cause some solid objects to change shape.
- Know properties that make materials suitable for their use.

Key Vocabulary: fabric, flexible, germinate, growth, invention, life processes, material, plastic, property, results, seed, suitable, test, waterproof, wood

Session 1: Use Kapow lesson 1: Reduce, reuse, recycle
Recap and recall: Remind the children of their work on the properties of materials from the unit *Science, Year 2, Uses of everyday materials*.
Describe the material wood using the words hard, tough and strong.
LO: To describe how materials can be reused.
Science in Action: To understand how the 3Rs contribute to sustainable products.
Sort a selection of materials focusing on:

- **What properties do plastics have?** (They are tough; light; some are flexible; some are stiff.)
- **What properties do fabrics have?** (They are soft; flexible; some are stretchy.)
- **Why does plastic make a better yoghurt pot than fabric?** (It does not absorb the yoghurt; it does not allow the yoghurt to leak out.)

Display the *Presentation: Reusing materials.* Instruct the children to sort the materials again. Ask them to sort them into two groups: objects that can be reused and those that cannot. Use *Presentation: Reduce, reuse, recycle* then children can draw a design for a product made from reused materials.
Vocabulary: flexible, material, plastic, property, recycle, reduce, reuse, strong, waterproof

Session 2: Use Kapow lesson 2: From plants to products
Recap and recall: Use *Presentation: Expand and add detail.* Encourage the children to use what they know about how each material is used to expand the statements. Ask the children to work with a partner to expand the statements verbally.
LO: To identify human-made and natural materials.
Working scientifically LO: To group based on characteristics.
Remind the children that this unit is about being mindful of their environment and how different choices affect the world around them. Ask them:

- **What are the three Rs?** (Reduce, reuse and recycle.)
- **What does it mean to reuse something?** (To use it again rather than just throwing it away.)
- **What does it mean to reduce?** (To use less products that are harmful to the environment.)

Explain that in this lesson, they will learn about natural and human-made materials, which can be very useful. Use *Presentation: Human-made materials.* Use *Presentation: Natural or*

human-made? and work as a class to sort the materials. Take input from the children and use the interactivity to sort the images. Highlight the materials that are made from plants like cotton and wood.
Watch the video BBC Teach – How is paper made? from 1:50–5:30. Add the key stages of the process to a flipchart:

1. Logs from the forest are loaded onto lorries.
2. Logs go into the debarker.
3. The logs go into the grinder to crush them into fibres.
4. Water is added to create a pulp.
5. The water is drained and the fibres are pressed together.

Use the *Presentation: How is paper made?* to model how to turn the information from the video into a storyboard.
Vocabulary: fabric, human-made, invention, natural, paper, wood

Session 3: Use Kapow Lesson 3: Testing suitability
Recap and recall: Use *Presentation: In the spotlight.* Ask the children to discuss why metal, stone and wood are good bridge-building materials. Take feedback and guide the children to understand that the materials are strong and tough, making them good for carrying heavy loads.
LO: To identify suitable materials based on their properties.
Remind the children of the three Rs by asking them to work with a partner to name them. Explain that they will be using their understanding of the three Rs to help them select a material for a purpose. Use the *Presentation: Material enquiry* and show the children the enquiry cycle. Explain that they will perform simple tests on each material to check its suitability for making it into a plant pot.

- A dry rip test.
- A fold test.
- A rip test after the fold.
- A rip test when folded and wet.

Show the *Pupil video: Testing materials* so the children can see how to perform each test. Place the children in groups of four or five and hand out the materials for testing (see Have ready). Ensure the groups have water and a measuring cylinder or pipette to measure a small amount of water. Allow time for the children to perform the tests and record the results.
Vocabulary: bubble wrap, eco-friendly, result, suitable, test, tin foil

Session 4: Use Kapow lesson 4: Testing plant pots
Recap and recall: Display the *Presentation: Range of answers* and remind the children of what plants need to grow by asking:

- **Where do plants come from?** (From seeds.)
- **Where would you plant a seed?** (In a pot with soil.)
- **How would you look after it after that?** (Water it; place it in sunlight; make sure it is not too cold.)

LO: To identify a material to help plant growth.
Working scientifically LO: To use observations to answer a simple question.
Remind children of the enquiry from the last lesson

- **What materials did you test?** (Tin foil; newspaper; card; bubble wrap; hard plastic; natural fabric.)
- **What simple tests did you perform?** (Rip tests; a waterproof test; a fold test.)
- **Which materials are eco-friendly?** (Newspaper; card; natural fabric.)

Explain that they will be testing each material again, this time by folding and rolling them into the plant pot shape. Use *Presentation: Testing plant pots* to show the enquiry question. Watch the *Pupil video: Testing the plant pot* to show the children how to test

each material. Organise the children into the same groups as in *Lesson 3: Testing materials*. Allow the children to work together to test each material, encouraging perseverance when trying to make the pot shape.
Vocabulary: germinate, growth, result, seed, soil, sunlight, test, warmth, water

Session 5: Use Kapow Lesson 5: Choosing materials
Recap and recall: Display the *Presentation: Agree or disagree?* and ask the children:

- **What makes a good plant pot?** (Strong to hold soil; rigid so that it does not collapse; waterproof for when the plants are watered.)
- **What properties does plastic have?** (Waterproof; strong; flexible or rigid.)
- **Why should you think about how much plastic you use?** (It does not break down in the environment; it takes a lot of energy to make; it causes pollution.)
- **What could you use instead of plastic for a plant pot?** (Newspaper; stone; ceramics; natural fibre.)

LO: To choose materials to create a suitable plant pot.
Working scientifically LO: To identify and classify living things.
Remind children of the three Rs by asking them to name them. Ensure children remember:

- Reduce.
- Reuse.
- Recycle.

Ask the children:

- **How have you been trying to reduce, reuse and recycle in this unit?** (By finding an eco-friendly material to use as a plant pot.)
- **Which materials tested were the most eco-friendly choices?** (Newspaper, card and natural fabric.)
- **Where does paper come from?** (Wood from trees.)

Remind children that using materials from natural sources is more eco-friendly and helps reduce the amount of less eco-friendly materials in the environment.
Hand out the cylindrical objects and materials to each child and allow them to make their plant pots. Assist those children who need help and ask confident children to support others. Explain to the children that they are going outside to choose natural decoration for their plant pot. Anything they choose should follow these criteria:

- It must not be alive.
- It must be a natural material.

Provide each table with soil, water and a spoon. Allow the children to fill their pots with soil and hand out a sunflower seed to each child. Encourage them to press it lightly into the soil and water it.
Vocabulary: alive, dead, growth

Link to career scientist:
Landscaper https://www.youtube.com/watch?v=ZNFAcNsB5Yo
Tree surgeon https://www.youtube.com/watch?v=lffIjGnwzJQ
Plant photographer

Scientists who have helped develop understanding in this field: David Attenborough