Medium Term Plan: Supporting Implementation of LTP/Progression Grid

Subject: Science Year 2: Uses of Everyday Materials

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
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Prior Learning (what pupils already know and can do)

Know the difference between an object and a material. Can name a variety of common materials. Know materials have specific properties to them. Know materials are either natural or manmade.

End Goals (what pupils MUST know and remember)

- Know that materials are picked for a specific purpose because of their properties
- Know glass is normally transparent and can be made into different shapes. Thick glass can be strong, but thin glass breaks easily
- Know different fabrics, have different properties. They can be stretchy (a pair of tights), insulating (a woollen coat) or absorbent (a towel)
- Know plastics are materials made from chemicals. They are strong and waterproof, can be made into any shape by applying heat, are good insulators and do not conduct heat or electricity
- Know furniture made from wood comes from trees. It is strong, flexible, and long-lasting and an insulator of heat and electricity
- Know fabrics are used to make clothes as they are flexible, warm and do not wear out easily
- Know the same object can be made using varied materials e.g. spoons can be made from wood, metal, plastic
- Know some shapes of objects can be changed by squashing, bending, twisting, or stretching

Key Vocabulary: uses, everyday materials, particular use, purpose, suitability, useful, properties, stretchy, squash, bend, twist, stretch, pull, push, change, strong

Session 1: Use resources from Kapow lesson 1: Objects and materials

Recap & Recall: Complete the *Quiz: Everyday materials* and watch the *Pupil video: Properties of materials* to recap properties.

LO: To recognise that objects are made from materials that suit their uses.

Working scientifically LO: To recognise that objects can be grouped.

Show children 3 plates (plastic, paper, ceramic) and ask what is the same? What is different?

material	What objects are made from.
property	How a material is described.
suitable	The best choice.

Children sit in a circle to sort objects into 2 hoops: wood & plastic – explain how we're grouping according to the material it's made from.

What properties does wood have that make it suitable for pegs, pencils, toys, tables and chairs? (It is strong and stiff).

What properties does plastic have that make it suitable for a ruler, a glue stick or a toy? (It is light and colourful).

Re-label the hoops with 'toys' and 'plates' and ask two volunteers to select objects from the pile that belong in each group. Help the children recognise that there is sometimes more than one suitable material for an object.

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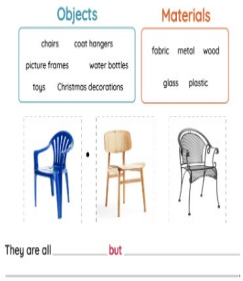
Using the *Activity: Sorting cards* discuss each object & what it is made from. Discuss which material is common and why/which is not common & why.
Show main the *Presentation: Objects and materials*, **discuss & model task**. Children move to tables (give a plate each to put their cut-up worksheet in).
NB. 3 different tasks if time permits (all shown on presentation).



As an adaption some children can label pics only.
Some can label & complete sentence.
Vocabulary: fabric, glass, material, metal, object, plastic, property, rock, suitable, wood

Session 2: Use resources from Kapow Lesson 2: Which material is suitable?
Recap and recall: *Gimme five!* Children tell their partner 5 objects made of plastic. What is a property? Why is plastic suitable for so many different objects? (Plastic is a strong material; it can be made into any shape and colour; it is light; it does not break easily.)
LO: To recognise that objects are made from materials that suit their uses.
Read The Smartest Giant in Town before lesson.
What does suitable mean? (Suitable means that the material is the right choice for the object's use.
Look at mixed classroom objects & 'inspect' eg the window is made from glass a suitable material as it's transparent to let light in etc.
Recap on SGIT story & show the *Presentation: Which material is suitable?*: Show children A3 grouping worksheet & complete together as a class.
Children learn the same object can be made using varied materials e.g., spoons can be made from wood, metal, plastic
Find other objects that can be made from different materials depending on the purpose. E,g, bowls, bottles, boxes
Why have they been made using a different material?
Move on to watch the *Pupil video: Parts of a bike* & model the task, children to complete the parts of a bike worksheet to:
Label part.
Name material.
Write why it is suitable.
Vocabulary: uses, everyday materials, particular use

Session 3: Use resources from Kapow Lesson 3: Stretch it, bend it, squash it!
Recap and recall: Using the *Presentation: What am I?* the children work out which material is being described.
LO: To recognise that the shape of some solid objects can be changed.
Working scientifically LO: To record data in a table.
NB: You will need playdoh a variety of objects
Explain how we're learning to recognise that the shape of some **solid objects** can be changed & use a solid, flexible object (e.g. cloth, scarf or teddy) to demonstrate how an object can be manipulated by hand to make it change shape. Can you name any other objects which can change shape? Write on whiteboard:

Stretch, twist, bend, squash.
Play the *Pupil video: Song – Stretch it!* Generate some hand actions for **stretch** it, **twist** it, **bend** it and **squash** it as a class.
Using playdoh, model how it can change shape as I stretch / twist / bend & squash it.
Repeat using a different object eg a sponge.
Explain that each table has a variety of different objects which children will manipulate to see if it changes shape or stays in its original shape.
Show the *Presentation: Does it change shape?* and model the task to the children.
Children record their findings in a table by using the different objects provided.
Vocabulary: bend, elastic, flexible, pull, push, stretch, squash, twist

Session 4: Use resources from Kapow Lesson 4: Testing Stretchiness
Recap and recall: Play the *Pupil video: Song – Stretch it!* Encourage the class to join in and perform the hand actions chosen in *Lesson 3: Stretch it, twist it, bend it, squash it!*

Whole class testing lesson.

LO: To compare the suitability of materials for particular uses.
Working scientifically LO: To gather data and use it to answer a question.
Refer to super science skills poster and explain that they are going to 'Observe, test and measure' to investigate 'Which material is the stretchiest?'. Model the task using the *Presentation: Testing stretchiness*. Explain how they'll be working in groups of 6, show Group roles on IWB and hand out a copy to each group to decide on their roles. Children work in groups to test the stretchiness of 6 different materials:
Rubber bands, wool, balloons, cardboard, bubble wrap, cotton from a sock, vest.
Children to complete their task and note which is stretchiest /least stretchy.
Vocabulary: compare, material, stretch

Session 5: Use resources from Kapow Lesson 5: Testing Strength
Recap and recall: Display the *Presentation: Describe the properties* and ask the pupils to talk to their partners about the materials the objects are made from and why they are suitable for their purpose.
LO: To recognise that the strength of some materials can be changed.
Working scientifically LO: To record data in a block graph.
Watch the *Pupil video: Bridges* and ask the class to listen out for the answer to the final question about the materials that bridges are made from (metal, stone, wood and glass), explain how we're going to make a bridge then test the strength of it.
Refer to the *Resource: Super Science skills poster* and tell the class this is a comparative test.

Display the *Presentation: Making bridges* and model the task to children, step by step.
Children working in pairs using books as either side of their bridge then folding a piece of paper & placing it between the books with unifix cubes on top to test the strength.
Children label the graph and shade the correct number of blocks on each column of the block graph to record their findings to show which paper fold makes the strongest bridge.
Vocabulary: block graph, record, strong, data, suitable

Session 6: Use resources from Kapow Lesson 6: Eco-friendly materials
Recap and recall: Display the *Presentation: Anagrams* and Unscramble the words to find actions that change the shape of objects.
LO: To compare the suitability of materials for particular uses.
Science in action LO: To recognise that some materials are harmful to the environment.
Watch the link: BBC Bitesize - What is plastic?. Discuss why plastic is bad for the environment and introduce the three Rs: Reduce, Reuse and Recycle.
Then show the *Presentation: What is plastic?*. Explain that their task is to plan the party using non harmful items.
Show Party Palace price list and challenge the children to choose 5 items which aren't harmful to the environment. Children to draw & label 3 gifts for the party bags. Some children may be able to write an explanation as to why they have chosen those items.
Complete the unit assessment.
Vocabulary: environment, material, object, plastic, recycle, reduce, reuse, suitable

Link to career scientist:
https://pstt.org.uk/application/files/4616/2851/6691/Water_Scientist_-_Zoe_Ayres.pdf
https://pstt.org.uk/application/files/4116/4139/4163/Renewable_Materials_Engineer-_Dr_Raquel_Prado.pdf

Scientists who have helped develop understanding in this field:
John Dunlop https://www.youtube.com/watch?v=T_EZ3QuYYXU
John McAdam https://www.youtube.com/watch?v=0j2gERdrOH4