Spirit of Innovation STEAM Resources

Science

Year Two

Everyday Materials

Investigating Everyday Materials

Links

- 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
- Asking simple questions and recognising that they can be answered in different ways
- Observing closely, using simple equipment
- Performing simple tests
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions

Resources

- Water tray
- 4 hoops
- Post-it notes
- Foil
- Plastic
- Paper
- Fabric
- Felt
- Wood
- Rock
- Polystyrene
- Cork
- Cardboard
- Leather
- Pottery
- Rubber
- Glass (optional)
- Glue
- Scissors
- Weighing scales
- Investigation Record Sheet (Download)
- Materials Blueprint (Download)
- Blueprint (Download)

Please use recycled materials where possible.

Skills

- Working as a pair
- Working in a team
- Discussing ideas
- Collaboration
- Compromise
- Grouping materials for a specific purpose

Questions

- Does it bend/twist/stretch or squash?
- Is it flexible/rigid?
- Is it absorbent/waterproof?
- Is it made?
- Is it light/heavy?
- Is it rough/smooth?
- Is it breakable/strong?
- What could it be used for?
- Is it able to be recycled/repurposed?

Activity

Activity One
In small groups
(40 – 50 mins)

Let the pupils explore specific (recycled) materials to see if they bend, twist, squash or stretch. Record their finding on the Investigation Record Sheet (Download)

Sort the materials into four groups:
Materials for the wings
Materials for the fuselage
Materials for the interior (inside of the plane)
Materials for the engine

Put these selected materials into hoops and label: wing/fuselage/interior/engine

Pupils and adult to discuss their findings and provide an appropriate reason for choosing each material.

**Adult could also annotate the pupil's comments*

Activity Two
In small groups
(40 - 50 mins)

Using the sorted materials in the hoops, from Activity One, investigate further. This may involve weighing, testing if waterproof and whether it floats or sinks.

Based on these further investigations and finding, select one material from each hoop that would be the best material for making the wings/fuselage/interior and engine.

This decision will require small group discussion, collaboration and perhaps compromise. Pupils will need to state appropriate reasons, based on their findings, for why they have picked specific materials.

Using an A3 or A4 Blueprint image of The Spirit of Innovation plane (Download) and a Materials Blueprint (Download) Stick their choice of materials onto the image of the plane and give their reasons why they chose it. E.g. It needs to be strong and waterproof/It has to be comfortable, but also light.

**Adult could also annotate the pupil's comments and post-it onto their work.*

Activity Three
In small groups
(30 - 40 mins)

Using the Blueprint from Activity Two; design and make your own plane. This plane should be created mainly from recycled materials; as well as light and waterproof.

If this activity is being linked to engineering (DT) The plane should also include moving wheels on an axle and spinning propeller. Pupils should explore how they can make their model stronger and stiffer, without effecting the weight too much.

**This activity could link with engineering (DT)*

Natural Materials			Made Materials		
wool	cotton	silk	paper	cardboard	polystyrene
wood	stone	clay	plastic	acrylic	nylon
sand	chalk	metal	glass	cement	tarmac