8. Uses of everyday materials

Conceptual knowledge

In this activity, children identify and compare the suitability of a variety of everyday materials.

Working scientifically

In this activity, children perform simple tests.

Assessment

Children meeting the conceptual knowledge objective will be able to say why they have chosen the materials that they have, for example, "I have chosen leaves and plastic for the roof because it is waterproof; I have not used sticks for the roof, because the gaps let the water in".

Children meeting the working scientifically objective will be able to say how they know which material is 'best' for a purpose. For example, "I know that leaves and plastic are waterproof because I poured water over my pixie house and it stayed dry inside. When I poured water over the pixie house with the roof made of sticks, it got wet inside".

Activity - Exploring materials for a pixie house

Resources needed

In an ideal world, this lesson would take place in a forest area, where there are lots of sticks, leaves and other natural materials around. Additional materials should include different types of cloth (cotton, felt, etc.), plastic carrier bags or cling film, cardboard and paper towel.

What to do

Prepare the materials you want the children to work with.

Discuss what children already know about the materials available to them.

Explain your health and safety rules. These might include the area that the children are allowed to work in and the things they can and cannot pick up.

If possible, put the lesson into a context, such as a story or topic.

Set the task – Can you make a house for a pixie? Discuss what the requirements are for your pixie… Does the pixie need to be warm, dry, protected from predators? You can adapt this depending on the context and the materials available.

Give the children time to explore with the materials available to them and to build a shelter for their pixie.

Children should then carry out simple tests to find out whether the requirements set were met. This is likely to include whether the pixie house is waterproof, warm or windproof.

Ensure that children wash their hands thoroughly after working outdoors.

Assessment for Learning

Discuss with the children how they will know whether the pixie house is waterproof (for example). Ask them how they might find out. Introduce the concept of carrying out a test. Ask questions to encourage the children to be systematic in their testing. What can we add to our design to make it waterproof? Which material worked the best?

Science Capital

Ask the children if they have made dens or shelters in the past. These might include shelters made outdoors as well as pillow forts or cardboard box dens. If there are any local shelters – e.g. woodland areas that contain dens, bus stops, bandstands, etc, discuss what materials these are made from and why. What about rabbit hutches or dog kennels? Discuss the materials that these are made from. Talk about people who might need to know about materials for their jobs, such as a builder, architect or clothes designer.

Support

Children may need to revisit the properties of materials in more detail. Give them the opportunity to explore the properties of the available materials – discuss which materials are soft, hard, bendy, etc. Children may need to be given more guidance/structure in carrying out a test.

Extension

To add extra challenge for more able children, ask them to come up with their own requirements for the 'pixie house' and to come up with tests for these.

Follow up

Children can draw a picture of their shelter or take a photograph of it, and annotate it to explain why they have chosen the materials they have and what tests were carried out.

Key vocabulary

Object, material, wood, plastic, water, paper, fabric, card/cardboard, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears

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