IndusTRY AT HOME!

Kit list

To carry out these explorations you will need

- A soft toy or puppet (e.g., a teddy)
- A clear beaker such as a disposable cup
- Elastic bands
- At least four 20 cm^2 squares of fabric and other materials to test (e.g., tissue paper, tin foil, fur fabric, polycotton, polythene (from a plastic bag))
- Teaspoon, pipette or plastic syringe
- Small plastic toy character to place in the beaker (optional)
- Tray to collect spills (optional)

Time: 20 minutes

Important words to understand:

Sometimes the words that we use in science have a different meaning to when we use them in everyday language. For example, it is common to use the word **material** to refer to fabric. However, scientists use the word **material** to refer to the stuff that things are made of e.g., glass, wood, paper, and metal as well as different fabrics. Eventually children will need to understand both uses of the word.

Although children may not use the word **property** yet when talking about the attributes of materials they should hear and start to use words to describe the properties of different materials such as **soft, hard, rough, smooth flexible** and **waterproof**.

Getting messy

You will only need small amounts of water for this activity, so it is suitable for situations where it's important to avoid a mess.

Working Together at home and school

Small children love repetition and can learn something new when they repeat an activity with different people. All these activities can be used either at home or at school or even at both.

Teddy's Hat

- Introduce the activity by showing your child a soft toy which has a damp head. Explain that she went out in the rain, but her hat wasn't waterproof, so her head still got wet!
- Show the fabric selection and explain that teddy needs their help to find out if any of them will keep her head dry.
- Ask for help to work out which would be the best material to use to make a waterproof hat that will keep her head dry.
- Your child may suggest ways to carry out the test. One way would be to stretch the fabric samples over a clear plastic pot, hold in place using an elastic band, and drip water onto it. (Use a pipette if you have got one or let tiny drops fall from a teaspoon).
- Placing a small plastic toy in the bottom of the beaker to see how quickly it gets wet can add to the fun.
- You and your child may be surprised to notice that none of the materials let the water straight through so you will have to watch and wait to see how quickly the water soaks in or drips through. You could think about both the length of time and the quantity of water to help you make your decision.
- Once you have chosen the best material to make a waterproof hat you could help your child to make a hat that fits teddy.

We are scientists!

This investigation may spark a conversation about the different qualities that are needed to make a hat; it is not enough for it to just be waterproof! For example, tin foil is waterproof, but your child will probably be able to tell you that it would not make a very comfortable or durable hat. Once you have identified some waterproof materials there will need to be a discussion about which one would be suitable to make a hat. Children may think of combining materials with properties other than waterproofness.

Watch out!

If using a drinking glass for this activity you will need to supervise your child very closely. A clear plastic pot would be preferable; a fast food outlet may be willing to donate one.

Adapted from: Water and Ice

IndusTRY IN SCHOOL!

Homework

There are different schools of thought about the benefits of homework for young children.

Taking part in home-based activities such as those described here, offers an informal homework activity, as well as an enjoyable way to link home and school learning without overloading children.

Top tips for child-initiated play

- **After carrying out an investigation in class, leave the equipment for children to access independently.**
- **When children carry out independent investigations (such as which car goes down the ramp the fastest) refer to them as scientists.**
- **Make sure that there is time at the end of independent play for children to talk about what they have been doing.**

Career Links

Material Scientists test all kinds of materials to make sure that they have the best properties for the job that they are needed for. For example, scientists developed the amazing stretchy fabrics that are used to make sportswear that allow athletes to move freely and the grippy fabric for goalie's gloves. They developed the fabric used for astronauts on space walks and the material used to make protective clothing for arctic explorers.

Give the material scientists in your class a selection of fabrics and challenge them to investigate which is the

- Softest?
- STRONGEST?
- *Most absorbent?*
- Stretchiest?
- Fluffiest?
- Warmest?
- Shiniest?
- Noisiest?

TAKING IT FURTHER

Follow up activities:

- Give your children a small selection of fabrics and other materials (6 or 7 is a good number). Spend some time helping them to talk about the different properties they can observe including appearance and texture.
- Hide a piece of one of the samples in a box and see if children can guess which one it is by asking questions that can only be answered with a yes or a no. E.g., Is it rough? Is it furry? Does it make a noise when you squeeze it?

I wonder which one is the best

Using the word 'best' can lead to some interesting discussions with children. For example, we might wonder which material would make the best hat, but the answer would depend upon exactly what we were measuring and what we wanted.

What different sorts of hats can you think of? What properties would different hats need?

Adapted from: Water and Ice