

This lesson plan aims to raise awareness of the purpose of helmets and reinforce why we should wear them. The lesson is based around a fun, practical activity where pupils drop eggs covered in different materials and record their findings, ie how badly broken the egg is. Smashing raw eggs can be messy and exciting so it might be worth having some extra adult help. It might also be worth checking that none of the children are allergic to eggs, and it is essential for pupils to wash their hands properly afterwards. The upper KS2 Science curriculum includes an objective of working scientifically, and this is a good way to introduce the concept of conducting a fair test before the pupils move into Year 5.

Learning objectives:

1. Understand why we should wear helmets when cycling and scooting.
2. Begin to develop an understanding of basic scientific methodology and why it is important.

Outcomes:

Pupils will have learnt how to set up a scientific experiment and the importance of making it a fair test. From the results, pupils should be able to deduce whether or not cycle helmets work, and they will have discovered the best material for them (polystyrene).

You'll need:

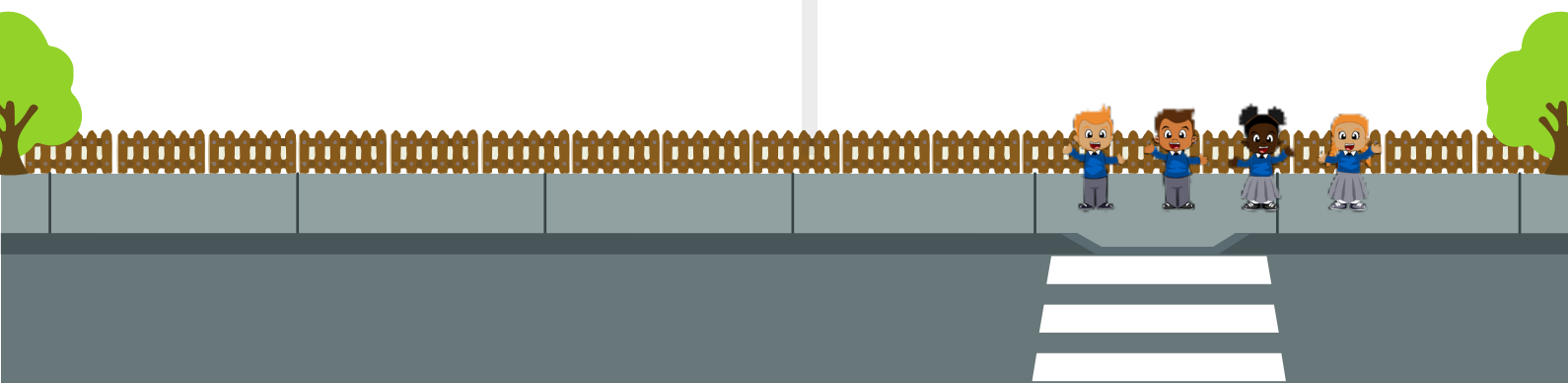
- Eggs
- Materials (paper, polystyrene, cling film, tin foil, cloth, cardboard etc)
- Bowls (to reduce mess if eggs break)
- A metre ruler
- Results template

Curriculum links:

- Science – working scientifically

This resource contains:

- Teacher guidance notes
- Lesson quick steps
- Egg experiment results template
- Sample letter for parents/carers



Activity

Compare the structure of an egg with that of the head (yolk = brain, shell = skull etc).

The function of the brain and the yolk are vital.

Aim: To test the effectiveness of different materials for cycle helmets.

Explanation: We will be wrapping raw eggs in different materials and then dropping them, to see which material is most effective at protecting the egg.

Fair test: Discuss and come to an agreement as a class about how to make the test fair, for example perhaps using one layer of material, dropping the egg from a specific height, making sure you drop it rather than throw it so there is no additional force to gravity.

Prediction: Pupils to predict, before dropping them, which materials will best protect the eggs and cause the least damage.

Method:

- Each group selects a material to wrap an egg in (for example tin foil, cling film, paper, cloth, plastic sheet, bubble wrap, tissue, corrugated cardboard, polystyrene).
- Wrap the eggs according to the fair test agreement, and fix with tape.
- Each group comes forward to the front of the class, predicts what will happen to their egg and then drops it into a bucket, abiding by the rules of the fair test agreement.
- All children discuss and reach an agreement on the level of breakage.

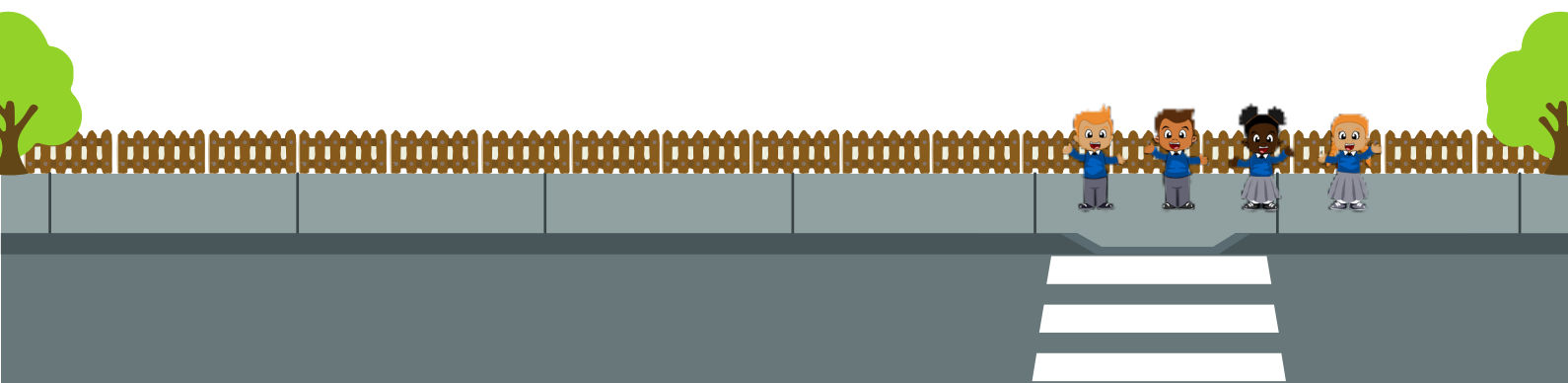
Conclusion:

- Pupils should find that polystyrene best protects the egg.
- Actual helmets are made from polystyrene for this reason.

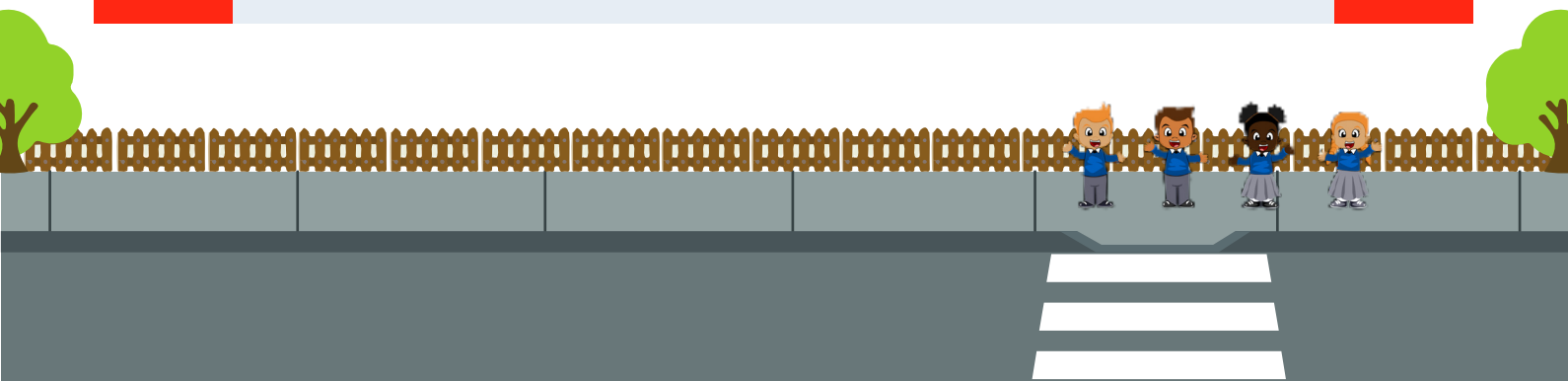
Whole class discussion:

Discuss whether or not the materials are good for making helmets. Below are some example questions you can ask pupils about different materials.

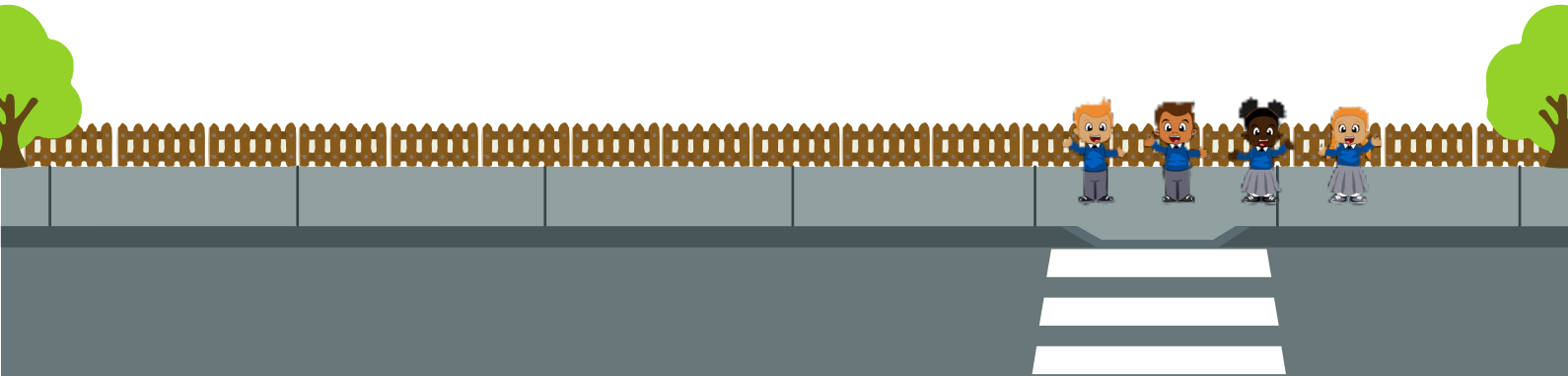
- What happens to cardboard when it gets wet?
- What happens to bubble wrap if left around?
- What does bubble wrap become once all the bubbles have been popped?
- The conclusion should be that polystyrene is the best material!



1	Source materials in preparation for the lesson.	<input type="checkbox"/>
2	Discuss the overview of today's lesson: "Today we will be conducting an experiment using eggs to find out which material is the most effective at protecting them".	<input type="checkbox"/>
3	Compare the structure of an egg with that of the head.	<input type="checkbox"/>
4	Discuss the methodology and rules to make the test fair, for example only using one layer of material, dropping the eggs from the same height and not using any additional force to gravity.	<input type="checkbox"/>
5	Split the class into groups, giving one material to each to prepare for their experiment.	<input type="checkbox"/>
6	Once they have wrapped the eggs, each group should stand in front of the class and conduct their test. The teacher should record the results on the template.	<input type="checkbox"/>
7	Once all groups have had their turn, discuss the results. Ask further questions about the different materials.	<input type="checkbox"/>
8	The end finding should be that polystyrene is the best material.	<input type="checkbox"/>



Material	Breakage	Notes



Dear parent/carers,

Today the children in class have been involved in a road safety lesson that covered the following learning objectives and outcomes:

Learning objectives:

1. Understand why we should wear helmets when cycling and scooting.
2. Begin to develop an understanding of basic scientific methodology and why it is important.

Outcomes:

Pupils will have learnt how to set up a scientific experiment and the importance of making it a fair test. From the results, pupils should be able to deduce whether or not cycle helmets work, and they will have discovered the best material for them (polystyrene).

Homework today is to:

Read the Green Cross Code handout and practise this whenever you are out and about.

The staff and governors of
would like to thank you for your support and help in reinforcing the road safety messages
that your child has learnt in our new road safety education initiative.

Yours sincerely

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