

The great egg drop challenge

Technologies | First and Second



Curriculum for Excellence: Experiences and outcomes

Craft, Design, Engineering and Graphics | Design and construct models/product

- I can design and construct models and explain my solutions. (TCH 1-09a)
- I can extend and enhance my design skills to solve problems and can construct models. (TCH 2-09a)

Craft, Design, Engineering and Graphics | Exploring uses of materials

- I can recognise a variety of materials and suggest an appropriate material for a specific use. (TCH 1-10a)
- I can recognise basic properties and uses for a variety of materials and can discuss which ones are most suitable for a given task. (TCH 2-10a)

Craft, Design, Engineering and Graphics | Representing ideas, concepts and products through a variety of graphic media

- I can explore and experiment with sketching, manually or digitally, to represent ideas in different learning contexts. (TCH 1-11a)
- I can use a range of graphic techniques, manually and digitally, to communicate ideas, concepts or products, experimenting with the use of shape, colour and texture to enhance my work. (TCH 2-11a)

Craft, Design, Engineering and Graphics | Application of Engineering

- I can extend my knowledge and understanding of engineering disciplines to create solution. (TCH 2-12a)

Success criteria

- I can design and make a device to protect an egg from breaking when dropped.
- I can explain my design choices using appropriate vocabulary.
- I can test and evaluate designs and suggest improvements.

Key vocabulary

Egg, fragile, protect, cushion, structure, impact, design, engineer, design, material, stable, durable.

Resources needed

- Lesson presentation
- Egg drop challenge design and evaluation sheet
- Eggs
- Cardboard (sheets, boxes, tubes)
- Bubble wrap
- Cotton wool or soft fabric
- Straws
- Rubber bands
- Paper (newspaper, kitchen paper, printer paper)
- Tape (masking tape, parcel tape, Sellotape, duct tape)
- String or wool
- Foil
- Small trays or egg cartons
- Scissors
- Rulers
- Pencils

Prior learning

Children should already have a basic understanding of materials and their properties and experience in building or crafting a simple structure.

Time	Teaching activity	Teacher notes
10 mins	Using the Lesson Presentation , ask the children what they think might happen to an egg if it is dropped. Take children's suggestions and ask them why they think this. Explain to the children that today they are going to take part in the great egg drop challenge. Their mission is to keep their eggs safe when dropped. Talk to the children about the job of an engineer and that they create packaging to protect things like eggs, phones, glass and other electronics.	
20 mins	Discuss with the children the ways in which they could protect their egg from breaking, thinking about the materials they will use and stabilising the egg. Sort children into pairs or small groups and give each an Egg Drop Challenge Design and Evaluation Sheet , explaining that they are now going to plan their designs. Encourage children to think carefully about what materials they will use, how they will cushion the egg and how they will ensure the egg cannot move around too much.	<i>Deepen children's thinking by asking which material they think will protect the egg the best and taking their reasons for why they think this.</i>
25 mins	Now, using their plan, explain that they children will create their egg protector. Highlight that it is important to work carefully and safely and follow their plan. Circulate the classroom as children are creating to check designs are being followed and children are working together.	
20 mins	Tell the children it is time to test. Explain that to ensure a fair test, each pair or group will need to drop their egg from the same height. Following each group's test, children return to their Egg Drop Challenge Design and Evaluation Sheet and complete the evaluation section.	
15 mins	As a closing activity for the lesson, each group can share their design with the class. They should explain how their design worked, what they would change if they were to test again and why they chose the materials they did.	<i>Prompt children to compare their designs to other groups' designs and discuss what worked differently. Ensure that children understand it is not about having a successful design but celebrating their creativity and being able to explain their choices.</i>

Lesson reflections / next steps / teacher notes

Assessment opportunities

- Are children considering material properties and structure in their design reasoning?
- Are children following their design plan when creating?
- Listen for explanations including design and technology vocabulary.
- Assess childrens' ability to suggest improvements for future attempts.

Suggestions for future learning

- You could go on to explore real-life protective designs and how these provide protection (e.g. parachutes, packaging, helmets) and what materials they are made from.

Home learning opportunities

- Children could be encouraged to recreate their own egg protector at home using recycled materials.
- Children could write a short explanation of which materials they have found that protect fragile items best and why.