



Egg drop!

LINKED CHALLENGE

To protect an egg that is dropped in the hen house

ACTIVITY OVERVIEW

Explore with the children what happens when an egg drops or experiences a force on its shell. Does it always break? Why might this be? Draw out the fact that an egg is stronger when compressed from top to bottom than from side to side (see key facts below for more detail). How does this help the hen after it has laid the eggs? Why is the egg not equally strong all the way around?

Set the children a challenge: One of Farmer Tim's hens keeps laying eggs on a high surface in the hen house. He's losing lots of eggs as they fall off the surface and smash when they hit the floor. The surface is 1 metre from the ground. Their challenge is to make an egg protector using junk materials.

Provide time for each pair to make a protector and try each of them out. Do the eggs break? Which protectors are the best and why? Did each pair use the knowledge that an upright egg is its strongest position to resist the force of hitting the ground?

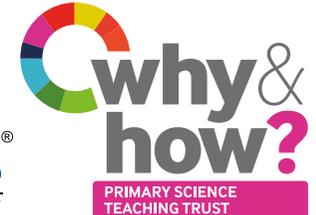
Extension Activity: (Check out the linked 'Explorify' video to see this in action.)

1. Place each full, open box of eggs hip width apart.
2. One foot at a time, step onto one of the set of eggs so you are standing on the eggs. (The vertical strength of the eggs means they shouldn't break.)
3. Can you raise each foot in turn?

KEY FACTS/SCIENCE

All unsupported objects fall towards the Earth due to the force of gravity acting between the Earth and the object. There will be some air resistance pushing back on the egg as it moves through the air, but this is small due to the small surface area of the egg.

An egg is stronger at its top and bottom because of its more domed/arched shape at these points, which distributes any force applied more effectively than across its side. This would be where a force is applied if a hen sits on an egg. The strength of the shell is weaker at the sides (much less domed) and this is where a chick needs to crack the shell to get out. Therefore greater force can be applied to the ends of an egg before it cracks and any force is shared further between a box of eggs (the pressure on each individual egg decreases).



RESOURCES

Main Activity

- 1 egg per pair +
- 3 eggs for demo

Plastic sheet (to cover the floor)

Junk materials: e.g. lolly sticks, elastic bands, newspaper, disposable cups, cardboard

Sticky-tape

Scissors

Metre ruler

Extension Activity

2 boxes of boiled eggs

Washing bowl with water/soap for washing hands and feet

Towel

QUESTIONS/FURTHER LEARNING

- Which materials are good to use to protect eggs? Can you explain why?
- How should an egg sit in its protector to provide the best chance of surviving a drop?
- Why is it important for an egg also to crack easily?
- Would a hard boiled egg crack as easily as a raw egg?

Online supporting video:

<https://tinyurl.com/v6df7nv>

