

Egg-Drop Design Challenge

A2-CHEM project summative · 25% due: End of Component 2 (Lesson 8)

Summative design task for the Chemical sciences strand, modelled on the SCSA Year 4 exemplar egg-drop design challenge. Students choose materials to protect a raw egg from a drop, justify each choice by its physical property, draw a labelled design, test it, and reflect on what worked and how to improve it. Completed in groups or individually over one lesson. Assesses ULO2 (materials and properties) and ULO7 (applying and communicating). Integrates the Design and Technologies design process. Weighting is a school convention (25% of four equally weighted summatives), not mandated by the syllabus.

Task

Your challenge: design a container that will protect a raw egg when it is dropped. You will choose your materials carefully, using what you know about their physical properties, then test your design and see how it went.



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Gravity pulls the egg down. Your design must slow the egg and cushion the landing so the shell does not crack.

How this works: you may work in a small group to build and test, but each person completes their own answers below. You will get to test your design by dropping it. There are spare eggs if yours cracks!

Part A — Plan and choose materials

1. List the materials you will use, and for each one write the **property** that makes it a good choice.

Material	Property (e.g. soft, strong, cushioning)	Why it helps protect the egg

Part B — Labelled design

2. Draw your design. Label each material and show where it goes.

Part C — Safety

3. Name one **risk** when dropping and building, and how you will stay safe.

Part D — Test and reflect

4. What happened when you tested your design? Did the egg survive?

5. Which material worked best, and why — using its property? What would you change to make your design better?

Aim for your best work: connect every material to a *property* (soft materials cushion; strong materials hold the box together), and give real reasons in your reflection.

Rubric criteria (weights as a percentage of this assessment)

Criterion	Weight	Descriptor
Choosing materials by their properties	35%	High (5–6): Selects materials and clearly justifies each choice by linking it to a relevant physical property (e.g. cushioning, strength, flexibility). Sound (3–4): Selects suitable materials and links most to a property. Limited (1–2): Selects materials with little or no link to their properties.
Design, labelling and safety	30%	High (5–6): Produces a clear, labelled design that shows each material and where it goes, and identifies a safety risk with a way to manage it. Sound (3–4): Produces a labelled design and names a risk. Limited (1–2): Produces a basic diagram with few labels.
Testing, evaluating and improving	20%	High (5–6): Tests the design, evaluates the result with clear reasoning about which property worked, and proposes a sensible, property-based improvement. Sound (3–4): Tests and evaluates the design and suggests an improvement. Limited (1–2): Describes the test result with little evaluation.
Communication and scientific vocabulary	15%	High (3): Communicates ideas clearly using correct scientific vocabulary (material, property, strength, flexible, absorbent, force) throughout. Sound (2): Communicates clearly with some scientific vocabulary. Limited (1): Ideas are unclear or use little scientific vocabulary.