# *Egg bungee jump* **Teacher background notes**

**In this investigation, the properties of materials are investigated in the context of modelling a bungee jump by an egg. There is an emphasis on linking the physical properties of materials to their use in order to solve a real-world problem.**

## [Australian Curriculum: Science links](https://assist.asta.edu.au/resource/4151/egg-bungee-jump-year-4-cle)

## Learning intentions

Students will be able to:

* identify that objects are made of materials;
* understand that materials have properties;
* identify the physical properties of some common materials;
* understand that the properties of a material can change if the material is changed;
* select materials for uses based on their properties;
* follow instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations;
* make accurate observations;
* record and represent observations;
* use tables to organise their observations;
* identify patterns from observations;
* draw conclusions based on evidence.

## Suggested time for this CLE

The time needed to complete the *Egg bungee jump* CLE will depend on the depth of the prior knowledge of students and the time taken to complete the two investigations—*Selecting materials* and *Engineering challenge*—and follow up with any further extension activities. Allow 2–4 hours.

## Prior conceptual knowledge

Science / Year F / Science Understanding / Chemical Sciences

Content description

*Objects are made of materials that have observable properties*[*(ACSSU003)*](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU003)

Science / Year 1 / Science Understanding / Chemical Sciences

Content description

*Everyday materials can be physically changed in a variety of ways*[*(ACSSU018)*](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU018)

Science / Year 2 / Science Understanding / Chemical Sciences

Content description

*Different materials can be combined for a particular purpose*[*(ACSSU031)*](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACSSU031)

## New concepts to be introduced

This CLE provides opportunities for students to develop an understanding of the properties of materials and how they relate to use. Physical properties are those properties of a material that can be measured or observed without changing the nature of the material.

It is important to distinguish between an **object** and the **material** of which it is made. For example, a wheel is an object that can be made of the materials rubber, and steel. The **properties** of rubber that make it useful are its durability and elasticity. The property of steel is its strength and rigidity. Combining these two materials produces an object with a specific purpose, which utilises the properties of the materials of which it is made.

Many students might be unaware that the properties of a material determine how useful it is for particular purposes. For instance, they might just accept that rubber is commonly used in car tyres without considering the properties that make it a suitable material for this purpose, including flexibility and durability.

Students frequently have unconnected knowledge of the properties of the materials. The materials students use every day have been chosen by others (based on the properties of those materials), so students seldom have a need to identify and appreciate the specific properties of those materials, for example, the waterproof nature of cling wrap or the transparency of glass.

The range of physical properties, and the terms used to describe them, may be unfamiliar to students. For example: absorbency, strength, flexibility, elasticity, malleability, transparency, viscosity, porosity, density, opacity, hardness and brittleness. As students describe the materials they are investigating, it is important to introduce the scientific terms that classify their observations, e.g., ‘it’s bendy’—flexibility, ‘it’s furry’—texture.

## Possible misconceptions

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| **STUDENTS MAY THINK…** | **INSTEAD OF THINKING…** |
| An object is what it is made of. | The object is made up of materials that have properties. For example, windows (object) are made of glass (material). |
| Materials are the property. For example, glass is the property of a window. | Materials have many properties, some of which make it useful for a certain purpose. For example, the property of glass that makes it useful for windows is its transparency. |
| Properties are possessions or land. | Different materials have different properties, such as colour, strength, texture, smell, hardness and flexibility that determine their applications and likely use. In selecting a material for a particular application, the cost of the material is also considered. |
| Materials are clothing fabrics or building materials; | Material is a term that can also mean any type of matter. |

## Links to further information

‘Bungee Jump… With Eggs!’, Education website <https://www.education.com/activity/article/egg-bungee-jump/>