

Topic: Exploring materials and their properties

Aboriginal and Torres Strait Islander histories and cultures







Students observe examples of traditional shelters built by Aboriginal peoples of Australia. These include those built by the Lardil and Dyirbal peoples of Queensland.

Students consider the materials used to build each style of shelter and understand that the materials used are chosen because of their properties.

Slideshow — Traditional housing from a variety of cultures

Exploring houses

Lesson concepts

-  Objects are made of materials that have observable properties
-  Science involves exploring and observing the world using the senses
-  Questions can obtain responses
-  Observations can be made using the senses
-  Observations can be discussed and ideas can be represented
-  Observations and ideas can be shared

Learning alerts

Be aware of students thinking that houses are all made from the same materials, and are all permanent structures.

Suggested next steps for learning

Explain to students that a variety of materials can be used in construction, with differing properties suited to purpose and conditions.

Today students will:

- understand that materials are selected for making houses based on their properties.

Resources

Digital

Slideshow — Housing in Australia

Slideshow — Traditional housing from a variety of cultures

Video — [The three little pigs](#) (ensure students are familiar with this tale prior to the lesson)

Find and prepare

Material word cards (from previous lesson)

Objects and materials science word list cards (Prep) (from previous lesson)

Key terms

materials, properties, shelter

For definitions and explanations of terms, please see the [Glossary](#).

Lesson

Examine suitability of housing materials



Throughout these lessons, you may like to use the [Objects and materials science word list cards \(Prep\)](#) to prompt and support discussion with students.

Note

Before the lesson, ensure students are familiar with the main ideas of 'The three little pigs'.

The term 'housing' is used in this lesson to describe a wide range of homes both permanent and more temporary. Examples include houses, apartments, caravans, units, sheds, cabins, house boats and tents.

Say to students

‘ In our last science lesson, we looked at the materials that hats are made from. We observed that hat materials have many different properties. In this lesson, we are going to consider the materials that our homes are built from. ’

Focus questions

Q: Before we think about the materials, tell me why we have homes.

A: For example: to live in, to keep us safe, to protect us from the weather, to sleep in

Q: What properties do you think housing materials should have?

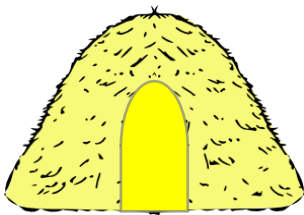
A: For example: keep rain out, be waterproof; to be strong so they don't fall down in strong wind

Q: What about if the home has windows, what properties do windows need?

A: To be see-through (we call this transparent) but also waterproof and strong.

Say to students

‘ Not all materials are good for making houses and the reason is often because of their properties. Remember the story of ‘The three little pigs’? All three pigs chose different materials to make their homes. ’



Ocal, haystack clip art,
<http://www.clker.com/clipart-14244.html>



Ocal, Homes clip art 20,
<http://www.clker.com/clipart-3511.html>

Focus questions

Q: What were the materials the pigs chose to build their houses from?

A: straw, sticks and bricks

Q: What happened to the houses in the story?

A: The wolf blew down the straw and stick houses but not the brick house.

Q: What properties did the bricks have which stopped the wolf blowing them down?

A: For example: strong, heavy, thick, no gaps when they are laid together

Q: Tell me some materials that wouldn't be suitable to make a house to live in.

A: For example: sand, glass, fabric, paper, cardboard

Identify materials used to build housing in Australia

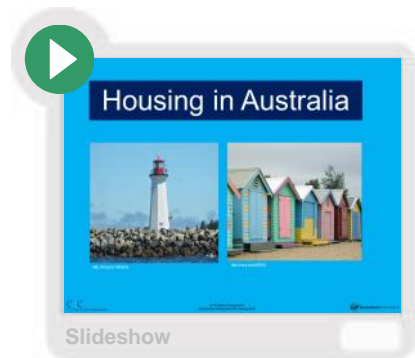
Say to students

- There are lots of different materials used to make homes. The materials used depend on what sort of home it is. We are going to view some pictures of a few homes we might see in Australia. As we look at the photos, try to identify some of the materials used and how their properties make them a good choice for the particular home. We can use the **Material word cards** to help us.

1. View the **Slideshow — Housing in Australia**.

This shows photos of some types of homes in Australia and the materials they are made from.

- While viewing, share ideas about some of the materials, their properties and their suitability for building the particular home.
- Use the **Material word cards** (from previous lesson) to discuss possible materials.



Say to students

- You are now going to observe the building we are in and see if you can identify the types of materials that have been used. You may need to look outside to see what materials were used on the outside walls and the roof. As you look, use your senses to explore the properties of the materials used.

Focus questions

Q: What materials did you identify?

A: For example: brick, wood, metal, glass

Q: Were there any materials that you don't know the name of? Tell me where they were.

A: For example: Yes, the walls and ceilings inside. (Try to provide name of material, for example: plasterboard, concrete sheeting.)

Q: Name one of the materials you observed and tell me about its properties.

A: For example: concrete — strong, hard, keeps water out, heavy so doesn't blow away, no gaps so doesn't let wind and cold in, holds its shape

Q: What properties do you think are important in house building materials?

A: For example: strong, heavy, tough, hold a shape, waterproof, keeps the wind and rain out

Say to students

There are scientists whose job involves observing and researching different building materials. They test them to find out if they are suitable to build houses. Often they try to improve the materials and sometimes they make a new material.

Identify materials used in a variety of cultures

View the **Slideshow — Traditional housing from a variety of cultures**.

- Discuss some of the materials used.
- Identify where they may have come from, for example: plants that grow in the area, other parts of the natural environment, things that may have floated down a river.
- Pose questions about some of the properties of the materials.
- Share ideas about the suitability of the materials for the type of home or shelter.



Say to students

To finish this lesson you are going to design your own model of a home and name the materials you would use to build it from in real life. You can use things you find around the room, such as toy bricks to build the model, but I want you to think about the real materials you would use.

2. Identify the method to be used to design the model, for example: drawing, painting, building.
 - Allow time for thinking and representing the design.
 - Take a photo of the home.
3. Ask students to:
 - tell you about their home
 - identify the materials they would use and why they would use them.