

#### Topic: Combinations of materials

#### Investigating using different glues for different purposes

##### Lesson concepts

- Different materials can be combined, including by mixing, for a particular purpose
- Science involves asking questions and describing changes
- People use science in their daily lives
- Questions can be responded to, posed and predictions made
- Investigations can explore and answer questions, and test ideas
- Information can be sorted
- Observations can be compared with predictions
- Observations and ideas can be communicated

Today students will:

- understand that different glues are suitable for combining different materials.

##### Resources

###### Sheets

Sheet 1 — Word cards  
Sheet 7 — Record 'materials',  
'properties' and 'uses' chart  
Sheet 11 — Glue recipe  
Sheet 12 — Glue investigation  
Sheet 13 — Glue test

###### Find and prepare

Science journal or scrapbook  
1 teaspoon salt  
1 cup flour  
2 cups water  
Mixing bowl  
Mixing spoon  
Plastic bottle top  
5 cm × 5 cm samples of  
fabric, aluminium foil  
Collection of glues  
(for example PVA, stick glue,  
liquid glue, craft glue)

##### Key terms

strength

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

## Lesson



Care should be taken when choosing glues for this lesson. Avoid glues with strong fumes or fast bonding properties (e.g. superglue, polystyrene cement, two-part epoxy). Instead, choose glues such as white craft glue, glue sticks, paste glue.

### Learning alerts

Be aware of students thinking that all glues are suitable for all purposes and materials.

### Suggested next step for learning

- Ensure students understand that glues vary in strength, and must be chosen to suit the purpose and the materials to be combined.

### Discuss the intended learning

#### Say to students

“ In this lesson you are going to learn about another material, which you will identify from clues about its properties.

Listen carefully to all the clues before giving an answer. Remember that the material needs to have all the properties I say. ”

#### What am I?

I can be gluggy.

I can be wet.

I am always sticky.

I am used for combining materials by holding them together.

What am I?

- Invite students to respond.
- Support students to match each clue to their response.

#### Focus questions

Q. *Is (student response) gluggy?*

A. Yes/no.

Q. *Is (student response) wet?*

A. Yes/no.

### Focus questions (continued)

Q. *Is (student response) sticky?*

A. Yes/no.

Q. *Is (student response) used for combining materials by holding them together?*

A. Yes/no.

- Confirm with students that the material is glue.
- Display property words (for example: gummy, sticky, wet) cut from **Sheet 1** — [Word cards](#).

### Share prior knowledge of glue

1. Display a collection of different types of glues (for example, PVA, stick glue, craft glue, liquid glue).



### Focus questions

Q. *What do you know about these glues?*

A. For example: The stick glue is not as messy in my book as the PVA glue.

Q. *Why do we need glue?*

A. For example: To stick things together.

Q. *Why do we need to have different glues?*

A. For example: The stick glue is not strong enough to hold my model aircraft together, but the PVA glue is.

### Say to students

“ Different glues are suited to different purposes in everyday life.  
Glues are used to stick materials together. ”

## Investigate combining materials to make glue

### Say to students

‘ In this lesson you will combine materials to make some glue of your own. ’

### Note

The word ‘combine’ means to put things together.

2. Display **Sheet 11** — [Glue recipe](#) and invite students to read it with you.
  - a. Display the materials for making glue: flour, salt, water, mixing bowl and spoon.



3. Display **Sheet 12** — [Glue investigation](#).
  - a. Support students to pose a question about combining materials to make glue and record the question on **Sheet 12**.
  - b. Invite students to examine the materials, and record the materials and their properties on **Sheet 12**.
  - c. Demonstrate how to follow the recipe and add level measurements of the ingredients.
  - d. Have students make their own glue by following the recipe on **Sheet 11**.

### Focus questions

*Q. How did the materials change when you combined them?*

*A. For example: The flour and salt are wet and mixed in with the water. The water is not clear any more.*

*Q. How strong do you think this glue will be? What do you think it will be able to stick?*

*A. For example: Not very strong. It couldn't stick wood, only paper.*

### Say to students

Science involves describing changes, just as you have done.

## Compare strength of glues

### Say to students

You will now conduct an investigation to compare the strength of glues.

4. Display **Sheet 13** — [Blue test](#) along with the mixed glue, glue stick, PVA glue, plastic bottle top, and samples of fabric and foil.

### Focus questions

Q. *What science questions could you ask about the strength of these glues?*

A. For example: What will happen if I use the mixture to stick the plastic bottle top to paper?

Q. *Which glue do you predict is the strongest?*

A. Personal response required.

- a. Encourage students to predict results when using the mixture, and record their predictions on **Sheet 12**.
5. Explain to students that they will now conduct the glue test.
  - a. Demonstrate the glue test on **Sheet 13**.
  - b. Explain to students that they will now follow instructions to test how well the glues stick different materials.
  - c. Allow sufficient time for students to complete the task independently.
6. Invite students to share any observations and results of the test.
7. Allow time for glues to dry.
  - a. Direct students to record the results on **Sheet 12**.
  - b. Encourage students to consider the questions in the 'Evaluation' section of **Sheet 12** and to record comments in the spaces provided.

### Say to students

People use science in their daily lives when choosing glues for particular purposes.

- c. Ask students to answer questions in the 'Apply science knowledge' section of **Sheet 12**.
- d. Make notes about students' responses in the space provided.

### Say to students

“ In this lesson, you conducted an investigation into combining materials using glues.

Suggest other ways of combining materials (for example, tying with string, sewing or using nails). ”

8. Ask students to record properties and uses of glue on **Sheet 7** — [Record ‘materials’, ‘properties’ and ‘uses’ chart](#)

### Say to students

“ In the next lesson you will continue to explore the usefulness of combining materials. ”