


**Practical
Science**

Natural and Processed Materials for 8-10 year olds

- Practical hands-on science activities
- Contains comprehensive teachers' notes and lesson ideas



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This book contains a package of photocopiable worksheets designed to be used to cover the Science learning area of **"Natural and Processed Materials"** with 8-10 year old students.

At this level the students are aware of the materials around them and should be able to identify and assess the properties of materials. Students will be involved in making close observations, collating information and assessing materials and their suitability. Tasks include altering common materials and determining whether the change is reversible or not, as well as undertaking a magnified study of some everyday cooking materials. Activities also include a look at food processing, including how the properties of food can change, and an analysis of the materials used to make a bicycle.

Each lesson has the potential to:

- extend into more than one lesson by having separate parts to the lesson sheet. Some sections of a lesson may need planning on other paper before final copies are transferred to the lesson sheet. Some lessons may be too long for one lesson and could be completed at another time.
- expand into other curriculum areas using a similar theme. There are ideas for cross-curricular integration with other learning areas. Sometimes a whole day's work could be planned around one lesson sheet.

Science Materials and Equipment

The equipment needed has been kept to a minimum to facilitate ease of planning. It is readily available in schools or is easily acquired.

All lesson sheets are outcome linked to the various curriculum documents (see page 6). Answers are provided where necessary (see page 27).

Other books in the Practical Science series:

- *Earth and Beyond*
- *Life and Living*
- *Energy and Change*
- *Working Scientifically*

Lesson Sheets Layout

Lesson 1: What is it?

Using only one hand, FEEL, one item in your group's bag. DO NOT LOOK, if it is in the first box (see) below. One at a time, work through each of the five objects in your bag.

Fill out the table below:

Name of object	Description	What is it made from?

How many items did you guess correctly?

Who won from your group?

STUDENT LESSON SHEET

- ① Lesson title
- ② Student learning activities

Lesson 1: Properties of Materials

Learning Outcomes:

- Lists the major materials used for different purposes.
- Makes connections between the structures of common materials and their properties.

Materials:

- object made from wood, e.g. ruler
- object made from glass, e.g. jar
- object made from paper, e.g. scrap paper
- object made from cloth, e.g. string bag
- object made from plastic, e.g. ice cream container
- board or card to create the list of properties
- card and Blu-Tack for notes

Lesson Ideas:

- Discuss each of the objects and relate their properties to their use.
- Children match the properties to their materials in a group on spare paper. When checked they can complete the activity on their sheet.
- Students should be able to touch each material before they attempt to list the properties. They can refer to Part A for assistance.
- When the properties are listed students can add up the total number of properties for each of the materials.
- Extension for early finishers: On the back of the worksheet students can draw an item which is made from each of the materials. Encourage students to draw what they think is the most useful object made from the material, e.g. for glass – they might draw a bottle.
- Part C of the worksheet should test students to assess why certain materials are used for objects.

Focus questions can include:

- Why is a pencil sharpened made from wood?
- Why is a window made from glass?
- Make a collection of cards/labels with the properties written on. Children attach them to classroom items that possess these properties.

Integration ideas:

English (Writing): Copy writing "What it is..."

Maths: A narrative telling what would happen if...

Art: Use a material to make a model.

Science: Make a collection of words from the lesson for word study activities.

TEACHERS' NOTES INCLUDE: (FOR EACH LESSON)

- ① Outcome links;
- ② Required materials;
- ③ Lesson plan ideas including extension ideas and teaching tips;
- ④ Cross-curricular/integration ideas.

Properties of Materials

Learning Outcomes:

- Lists the ways materials are used for different purposes.
- Makes connections between the structure of common materials and their properties.

Materials:

- *object made from wood, e.g. ruler*
- *object made from glass, e.g. jar*
- *object made from paper, e.g. scrap paper*
- *object made from cloth, e.g. library bag*
- *object made from plastic, e.g. ice cream container*
- *board or chart to create the list of properties*
- *card and Blu-Tack® for labels*

Lesson Ideas:

- Discuss each of the objects and relate their properties to the list on the worksheet.
- Children match the properties to their meanings in a group on spare paper. When checked they can complete the activity on their sheet.
- Students should be able to touch each material before they attempt to list the properties. They can refer to Part A for assistance.
- When the properties are listed students can add up the total number of properties for each of the materials.
- *Extension for early finishers:* On the back of the worksheet, students can draw an item which is made from each of the materials. Encourage students to draw what they think is the most useful object made from the material, e.g. for glass – they might draw a bottle.
- Part C of the worksheet should lead students to assess why certain materials are used for objects.

Focus questions can include:

- Why is a pencil sharpener made from plastic?
- Why is a window made from glass?
- Make a collection of cards/labels with the properties written on. Children attach them to classroom items that possess those properties.

Integration Ideas:

English (Writing): Story writing: “What if ... ?”

Write a narrative telling what would happen if ...

- cars were made from wood?
- aeroplanes were made from glass? and so on.

The Arts: Create an illustration for the story using art or paint materials.

English (Spelling): Make a collection of words from the lesson for word study activities.

Lesson 1 Properties of Materials

Natural & Processed Materials

A

Join the sentences to show the meanings of the properties:

① A material is **flexible** if

② A material is **opaque** if

③ A material is **transparent** if

④ A material is **brittle** if

⑤ A material is **soft** if

⑥ A material is **elastic** if

⑦ A material is **strong** if

■ it withstands banging.

■ it breaks into small pieces easily.

■ it can be twisted easily.

■ you can't see through it.

■ it stretches easily.

■ you can easily push your fingers into it.

■ you can see through it easily.

B

Tick the properties of these materials found in the classroom.
Tally up their properties for each material.

MATERIALS	PROPERTIES							TOTAL
	flexible	transparent	opaque	brittle	strong	soft	elastic	
WOOD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
GLASS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PLASTIC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
PAPER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CLOTH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

C

Think About!

① Why is paint used to create pictures?

② Why is rope used to skip with?

③ What material is used to draw on a blackboard? Why?

