

# Sticks, Stones, and Shells

## Naturally occurring materials, and others

**Purpose of the lesson:** to observe and explore materials that occur naturally and ways in which they are adapted for use.

- **Sc1: 2b** use first hand experience and simple information sources to answer questions;
- **Sc3: 1c** recognise and name common types of material, e.g. metal, plastic, wood, paper, rock, and recognise that some of them are found naturally.

### Learning objectives

#### Children learn:

- that some materials occur naturally, and some do not;
- the names of a range of naturally occurring materials;
- that some naturally-occurring materials are treated before use, and ways in which they are treated;
- that their own experience(s) and simple information sources can be used to answer questions.

### Learning outcomes

#### Children:

- recognise that some materials are naturally-occurring and some are not;
- name some naturally-occurring materials;
- distinguish between the material and the object made from it.

### Vocabulary

natural, manufactured/man-made, useful, hard, sharp, protect(ion), treat(ment)

### Resources & preparation

- Large hoops or ropes for sorting;
- one or more empty shells (sea-shells or others).
- (If possible) A container with one or more live snails and suitable vegetation.
- A collection of objects or materials, of which four or five are naturally occurring, e.g. a stone, a tuft of raw wool or cotton, a twig, a shell, an animal bone, a lump of wet clay, a lump of dried but untreated clay, a pile of sand; and a similar number are manufactured objects, e.g. a wooden door handle, a glass paperweight, a woollen sock, metal washer/coin, glazed clay pot, or tile, etc.
- A piece of rough-cut timber (untreated); a piece of planed, shaped timber; a piece of

### Activity 1 Can you find it?

- Show the children the collection of samples listed above. This can be done as a class demonstration on the carpet, or with the children gathered round a large table. The items can be passed round after you have talked about them. Hold up or point to the samples one by one and ask the question: **Could you find this, just as it is, or has someone had to make it?**
- Use this test to establish that some objects or materials occur **naturally**, and others do not, and, (with the children's help) sort the samples accordingly into hoops, or large circles made of rope. The results of this sorting activity can be recorded later, when the children have returned to their groups, in the table and/or the Venn diagram on **Resource Sheet 2.1 Can you find it?**

### Activity 2 Object and material

- Next, ask the question: **What is it made of?** while showing the class the same objects in turn. The form of the answer will be, e.g. 'the twig is made of wood'. In this way the children will learn to name common materials and further learn to distinguish clearly between objects and materials. Note that in some cases the name of an object and the material of which it is composed are the same word, e.g. **The shell is made of shell.** Explain that a **shell** is a **whole thing**, where as **shell** is **stuff** like wool or glass. A piece of broken shell is not a shell: it is just some of the material (or stuff) that shells are made of.
- Note also that some materials do not constitute objects at all. Sand, clay, wool, can only be thought of as stuff. You can't talk about 'a sand' like you can talk about 'a twig', or 'a shell'. This is quite a difficult, abstract (and grammatical) point, and need not be fully resolved at this level.

### Activity 3 Natural objects

- Return the children to their places and give out one or more of the shells to each group, to examine and discuss. Point out that shells are natural objects: you can pick them up on beaches etc., exactly as they are. Ask the following questions:
  - **What are they?**
  - **Where do they come from?**
  - **What are they for in the natural world?**
- Establish that they are protection/shelter etc. for various species of living creatures. A shell is a natural 'house'. If you have been able to collect live snails, examine them, and observe how they live inside their shells.
 

**Note:** Take the opportunity to talk about respect for living creatures, explaining that they should not be unnecessarily handled or molested, and that they should be returned promptly to their natural environment after observation. (Some children may have learnt that snails are considered pests by gardeners. If the question arises, explain that even pests should not be treated inconsiderately, or harmed without cause.)

polished, painted or varnished wood (e.g. chair leg).

- **Resource sheets 2.1-2.3** one per child.

#### SAFETY:

Ensure that any glass objects you allow the children to handle are solid and unbreakable. Avoid giving the children sharp objects to handle. Make sure that any organic matter, especially animal bone, is completely sterilised before close examination or handling.

#### Differentiation

- Some children will continue to blur the distinction between **natural objects** and **natural materials**, and will, for this reason, need help with completing **Resource Sheets 2.1 Can you find it?** and **2.3 Materials all around**. The 'Changes' column in **Resource Sheet 2.3** will also present difficulties for some children, and for them a simple Yes or No, to say whether they have been treated, will suffice.
- Most children should give some brief description of the treatment, e.g. **polished, painted, shaped, stitched, glued together**.
- The more able children can be asked to explain (orally when discussing their work) in what way the treatment has made the material more **suitable for its intended use**.

#### Extension activities

- **Activity 7** and **Resource Sheet 2.3 Materials all around** could be completed or extended at home.
- Ask children to carry out further research in the library, on CD Rom or the Internet, on the subject of Stone Age tools, and/or related topics.

## Notes

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### Activity 4 Natural materials

- Talk next about the **properties** of shell as a **material**, and hence of shells as **protective covering**. Note that shells are **hard** and **rigid**, and that is how they give some protection. Compare the properties of shell with those of some of the other natural materials, e.g. wood, stone, wool, leather. Note, for instance, that wool is a natural material that grows on sheep and **keeps them warm**. Observe that it is soft and **fluffy**, very different from shell, both in **properties** and in **function**. Ask questions of the kind:
  - *Would a coat of shell keep a creature warm?*
  - *Would a covering of wool be much protection?*

### Activity 5 Objects and uses

- Once it is realised that materials, like shell, wood, wool, etc., have natural functions, point out that they can also be used by humans for various **purposes**. Start with the shell again, showing how a large shell can be used as a shallow dish to contain things, e.g. pins, buttons, paper-clips, nuts. You could demonstrate how, say, a mussel shell could be used as a spoon to scoop up quantities of sugar or flour or even liquid. You could also demonstrate how some shells, like razor shells, are sharp enough to cut paper or cloth. Mention too that shells have a decorative use, and are often displayed as ornaments.
- The purpose of this part of the lesson is to indicate that **some natural objects or materials can be used as they are**. This is how early humans, in prehistoric times, first began to use materials: sticks, stones, flints, bits of bone etc. for tools to cut and shape things; and as weapons for hunting and fighting; animal skins for clothing and shelter, etc.

### Activity 6 Treating materials

- Explain that humans do not only use natural materials as they find them. They also **treat** them to make them more suitable for their uses.
- Clay, for example, can be shaped while it is wet and soft to make a dish or pot, brick or tile; then **left to dry**, or **fired** in an oven to make it hard. It can then be **painted** or **glazed** (given a shiny, glass-like covering) to make it **waterproof**. Look at any samples you have provided. Animal skins can be **dried** and **stitched together** to make tents, sails; reeds can be dried to make a kind of paper. All these treatments of materials were discovered and used by prehistoric people.
- Hand out copies of **Resource Sheet 2.2 In the Stone Age**, depicting a number of prehistoric implements and objects. Ask children to identify, or label, as many as they can.
- Finally, show children a piece of raw wood in the form of a branch or twig. Show how the bark can be peeled off. Next, show them a piece of wood that has been **dried out (seasoned)**; and another that has been shaped by **turning, planing** etc., and finished by **polishing**, e.g. a chair leg, a wooden ornament, a door handle. Ask why these treatments make the wood more suitable or useful. Establish that wood that has been polished and/or varnished is **smooth** and **will not splinter**, and **can be wiped clean** more easily, etc.

### Activity 7 Walkabout

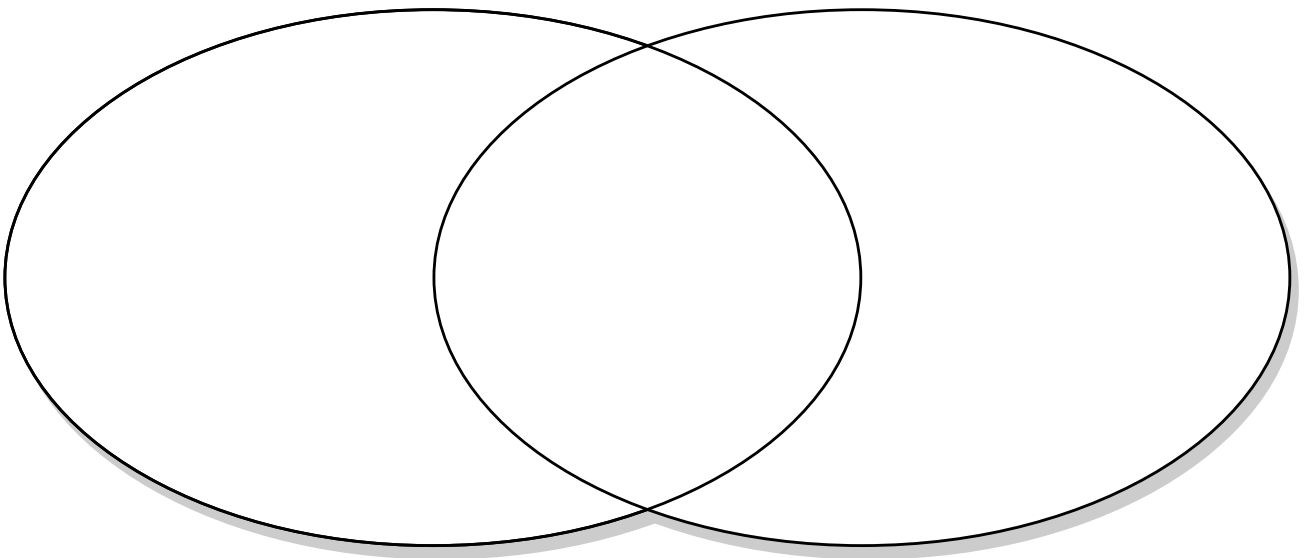
- As a conclusion to the lesson, take the class for a walk round parts of the school and/or surroundings, noting and listing a range of objects made for a **purpose** from natural materials, and discussing what sort of **treatments**, if any, they have received to make them **suitable** for the purpose. **Resource Sheet 2.3 Materials all around** can be used to record the observations, by naming the object, material and one way in which it has been changed or treated. (An example is given.)

# Can you find it?

## Resource Sheet 2.1

Name: \_\_\_\_\_

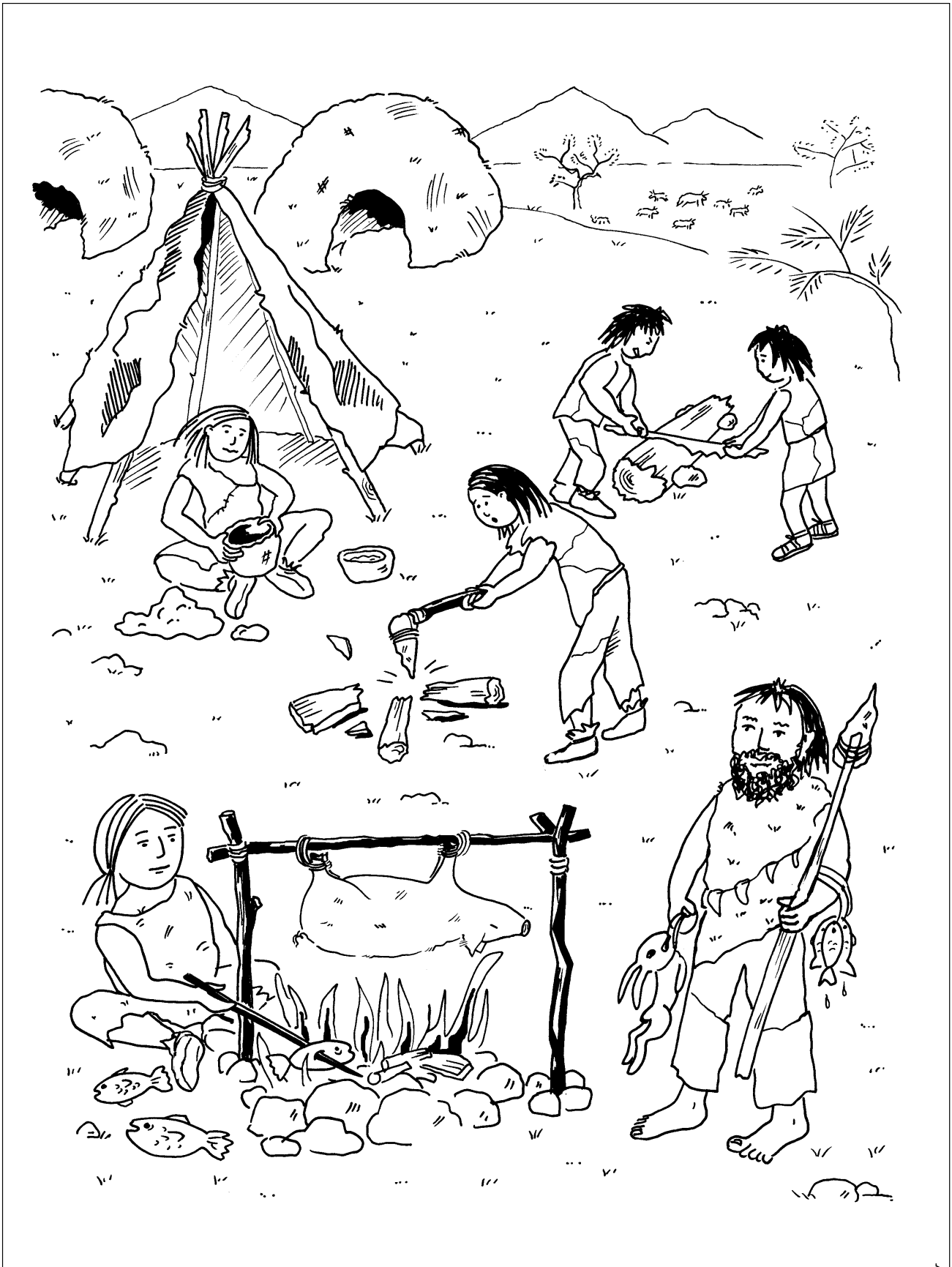
Found	Made



# In the Stone Age

## Resource Sheet 2.2

Name: \_\_\_\_\_



# Materials all around

## Resource Sheet 2.3

Name: \_\_\_\_\_

Object	Material	One change
door	wood	painted