Wood Technology

Metals, plastics and ceramics

It is not necessary to carry out all the activities contained in this unit. Please see *Teachers' Notes* for explanations, additional activities, and tips and suggestions.

***Note:** The categorisation of activities is indicative only and should not prevent teachers from using any activities that are considered suitable for a particular group of students.*

Making the best use of these units

Learning Record

A copy of the Learning Record should be distributed to each learning support and language support student.

Students should:

1. Write the subject and topic on the record.
2. Tick off/date the different statements as they complete activities.
3. Keep the record in their files along with the work produced for this unit.
4. Use this material to support mainstream subject learning.

Introduction of a topic or activity should ensure that students understand **what** they are doing and **why**. Many students will have some difficulty in understanding both the language in the activity and the instructions/purpose for carrying out the activity.

You can create your **personal teaching resource** by printing these units in full and filing them by subject in a large ring binder.

Encourage students to:

- Bring the relevant **subject textbooks** to learning/language support class. It does not matter if they have different textbooks as the activities in these units refer to vocabulary and other items that will be found in all subject textbooks. These units are based on curriculum materials.
- Take some **responsibility for their own learning** programmes by:

Developing a **personal dictionary** for different subjects, topics, and other categories of language, on an on-going basis. This prompt is a reminder.

Recording what they have learnt on the ***Learning Record,*** which should be distributed at the start of each unit.

Keeping their own **files** with good examples of the work produced for different subjects and topics. This file will be an invaluable **learning resource** in supporting mainstream learning.

Indicates that answers may be found at the end of the unit.

Don't forget that many of the activities in these units are also suitable as **homework** tasks or for **self-study.**

Keywords

The list of keywords for this unit is as follows:

Nouns

acrylic
alloys
aluminium
buckets
ceramics
enamelling
glass
heat
insulator
materials
mercury
metals
pipes
plastics
powder
precautions
properties
rust
scratch
steel
thermoplastics
thermosetting
types
windows

Adjectives

brittle
ceramic
decorative
good
hard
metal
plastic
resistant
strong

Verbs

apply
bend
brush
coat
compare
describe
explain
galvanise
give
list
mould
name
resist
use

Vocabulary file 1

Word	Meaning	Note or example*
aluminium		
insulator		
mercury		
metals		
precautions		
rust		

* You may wish to write a sentence or phrase, make a note of the page in your textbook where this word appears or, if English is not your first language, provide a translation into your language.

 Get your teacher to check this and then file it in your folder so you can use it in the future.

Vocabulary file 2

Word	Meaning	Note or example
scratch		
apply		
brush		
mould		
resistant		
decorative		

Get your teacher to check this and then file it in your folder so you can use it in the future.

Language Level: all
Type of activity: whole class
Suggested time: 10 minutes

Activating students' existing knowledge

Use a spidergram to activate students' ideas and knowledge on the key points in this chapter. See **Teachers' Notes** for suggestions.

Possible key terms for the spidergram:

What things are made of

Raw materials

- Invite newcomer students to provide key words in their own languages.
- Encourage dictionary use.
- Encourage all students to organise their vocabulary into relevant categories (e.g. meaning, nouns, keywords, verbs etc.).

All students should record vocabulary and terms from the spidergram in their personal dictionaries.

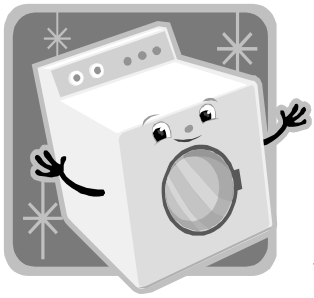
NAME: _____ DATE:_____

Wood Technology: Metals, plastics and ceramics

Language Level: A1
Type of activity: pairs or individual
Suggested time: 30 minutes

Working with words

1. What are things made of? Choose a material to complete each sentence.



ceramic material **plastic** **metal**

a) The washing machine is made of…….

b) The bucket is made of ….

c) The tile is made of ….

2. Look around the classroom or use your textbook to think of objects, and what they are made of. Complete the sentences.

_____, _____ and _____ are made of plastic.

_____, _____ and _____ are made of metal.

_____, _____ and _____ are made of ceramic material.


Check that these key words are in your personal dictionary.

Language Level: A1
Type of activity: pairs or individual
Suggested time: 30 minutes

Picture Sentences

1. Tick the correct answer

a) This is made of plastic.
b) This is made of aluminium.
c) This is made of brass.

.

a) This is made of plastic.
b) This is made of aluminium.
c) This is made of brass.

a) This is made of plastic.
b) This is made of aluminium.
c) This is made of brass.

2. Put these words in the correct order to form sentences.

are metals solids most

_____

us are around plastics all

_____

material ceramic glass is a

_____

Language Level: A1/A2
Type of activity: pairs or individual
Suggested time: 30 minutes

Odd One Out

1. Circle the word which does not fit with the other words in each line.

Example: ***apple*** ***orange*** ***banana*** ***taxi***

metal	steel	aluminium	wood
ceramics	horse	heat	resistant
plastics	moulded	dog	heat
compare	describe	explain	food

2. Find these words in your textbook. Then put them in short sentences in your own words. Use a dictionary if necessary.

to apply _____

to brush _____

to coat _____

to mould _____

to bend _____

Check that these key words are in your personal dictionary.

Language Level: all
Type of activity: individual
Suggested time: 20 minutes

Keywords

1. Fill in the missing letters of the keywords listed below.
On the line beside each word, write whether the word is a noun, an adjective or a verb.

gal_ _ni_ _ng _____

ena_ _lling _____

de_ _ra_ _ve _____

ma_ _rial _____

2. Write as many words as possible related to **metals, plastics and ceramics**. You have 3 minutes!

_____

_____

_____

_____

_____

_____

_____

Check that these key words are in your personal dictionary.

Language Level: A1 / A2
Type of activity: pairs or individual
Suggested time: 20 minutes

Unscramble the letters

1. An object formed from material without any particular shape UODDELM

Answer _____

2. A type of metal sometimes used to make windows MINAUMILU

Answer _____

3. Things you do to stop anything bad happening CAPESUTIRON

Answer _____

4. When you can do something without difficulty LEYAIS

Answer _____

Solve the secret code

English	A	E	F	L	M	R	S	T	U
Code	B	X	Y	C	G	Q	J	O	W

example: GXXO = MEET

GXOBCJ BQX WJXYWC =

_____

Language Level: all
Type of activity: pairs or individual
Suggested time: 30 minutes

Completing sentences

Fill in the blanks in these sentences. Use words from the Word Box below.

Although there are many _____ of metal, they can be classified into two main groups: ferrous and non-ferrous metals. Before we look at these, we must remember that a lot of metals we are used to are in fact a combination of several metals. These are called _____.

FERROUS METALS

The Latin ferrum means iron. Ferrous metals, therefore, are _____ that are made up predominantly of iron. Some examples of ferrous metals are cast iron, mild steel and tool _____. They are relatively cheap to produce and are _____ in thousands of everyday objects: cars, cutlery, tins, etc.

NON-FERROUS METALS

All other types of metals are referred to as non-ferrous metals.

These metals will not rust as they contain no _____ . The five most commonly used non-ferrous metals are:

- aluminium
- copper
- lead
- zinc
- tin.

Word Box

iron	steel	types	used	metals	alloys

Language Level: A2 / B1
Type of activity: individual
Suggested time: 40 minutes

Multiple choice

Read the text below and choose the best answers.

Simple ceramics were one of the first materials used by ancient man. Mud or clay was shaped when wet into pottery, cooking utensils, bowls, etc. These were then baked in a fire to make them hard. Moulds were also made in this way for casting bronze weapons and implements. The most common types of ceramics used today are glass, tiles and cement. All ceramics have the following properties:

1. very high resistance to heat
2. they are brittle (a substance is brittle if cracks form easily in it and spread easily through it)
3. they are very hard
4. they do not conduct electricity.

Ceramics in general are difficult materials to work because of their brittleness and hardness. Shaping and cutting is best left to professionals.

Of all ceramics, glass is probably the most widely used in furniture-making. It is often used to cover highly decorative table tops, to protect the polish from stains and scratches. Cabinet doors and shelves can also be made from glass. In order to decorate the glass it can be bevelled, or engraved, or pictures and designs can be ground into it.

1. Which of these is a common type of ceramics today?

a) mud b) bronze weapons
c) plastic d) glass

2. What does it mean if something is brittle?

a) it conducts electricity b) it is baked in a fire
c) it cracks easily d) it is very hard

3. Who should do the shaping and cutting of ceramics?

a) professionals b) difficult people
c) ancient man d) nobody

4. Does glass stain and scratch the polish on table tops?

a) Yes b) No

5. Can glass be engraved?

a) Yes b) No

Language Level: B1
Type of activity: individual
Suggested time: 30 minutes

Grammar point

Adjectives

(adjective: a word that describes a noun or a pronoun)

1. Adjective hunt. There are ten adjectives in the list below. Put a circle around each one.

brittle	bucket	tile
heat	ship	cutlery
window	hard	strong
ceramic	metal	shiny
decorative	washing machine	CD
rust	plastic	
rusty	resistant	

2. Did you notice? Some words can be adjectives and nouns.

Example: The bucket is made of <u>plastic</u>. (noun)
The <u>plastic</u> toy is made in China. (adjective)

What other words from the list can be adjectives and nouns?

3. Can you think of four adjectives to describe metal? Here is a sentence from your textbook. Add four adjectives. You can check your answer in the textbook or in the Answer key.

- We think of metals as being _____, _____, _____ and _____.

Grammar point

Adjectives (continued)

4. Below are more sentences from your textbook, however, many of the adjectives are missing. Read the sentences and think about what adjectives might be suitable. Read the sentences again and select adjectives from the box.

- Sodium is also a metal, yet it is _____ enough to float in water.
  Magnesium
- They are _____ conductors of heat.
- PROPERTIES OF NON-METALS: They are _____ - they break or crack easily when bent or twisted.
- They have no shine: they have a _____ surface.
- They are generally _____ conductors of electricity.
- Paints may be applied to metals by brush, spray or dipping. Make sure that the surface is perfectly _____, _____ and _____.
- Plastic is such a versatile material that it can often be a _____ alternative to metal or wood.
- For example, the plastic used in a plastic fork must be _____ and _____ and be able to resist fairly _____ temperatures.
- The plastic used in a shopping bag must be _____, _____ and _____.

bad	**good**	**strong**	**dull**	**clean**	**brittle**	**grease-free**
cheap	**strong**	light	**tough**	**high**	**cheap**	**flexible**
		rust-free				

5. Now it's your turn!

Go to your textbook and write out six sentences that contain adjectives. Leave a gap where the adjective should be. Now swap sentences with a partner. Fill in, and correct one another's work.

Alphaboxes

Using your textbook, find **one** word beginning with each of the letters of the alphabet. Write the word in the relevant box. You could also write the word in your own language.

a	b	c
d	e	f
g	h	i
j	k	l
m	n	o
p	q	r
s	t	u
v	w	xyz

NAME: _____ DATE:_____

Wood Technology: Metals, plastics and ceramics

Word search

Find the words from the list below.

```
                O T
                K T
              A X Y P
              B N J H
            H E A T J I
            P M E T A L
B R I T T L E M P R O P E R T I E S D V
G R U S T H E R M O P L A S T I C S X S
  T P R E C A U T I O N S S T E E L P
    T M T H E R M O S E T T I N G C
      O I N S U L A T O R I W R F
        R E S I S T A N T O G W
      J C N E N A M E L L I N G O
      Z D E C O R A T I V E I I A
    P X G A L V A N I S I N G J D C
    W I N D O W S   G L A S S V I
  B H H A R D Y       P I P E S N M
  L J M H D           C B S P M
K Q N F               H J M D
K A                     E M
```

BRITTLE	HEAT	THERMOPLASTICS
DECORATIVE	INSULATOR	THERMOSETTING
ENAMELLING	METAL	WINDOWS
GALVANISING	PIPES	RESISTANT
GLASS	PRECAUTIONS	RUST
HARD	PROPERTIES	STEEL

Play Snap

Make Snap cards with 2 sets of the same keywords. See *Notes for teachers* for ideas about how to use the cards.

✂

plastic	**plastic**
properties	**properties**
insulator	**insulator**

describe	describe
compare	compare
mercury	mercury

ceramics	ceramics
heat	heat
brittle	brittle

hard	hard
strong	strong
aluminium	aluminium

Answer key

Working with words, page 7
a) The washing machine is made of metal.
b) The bucket is made of plastic.
c) The tile is made of ceramic material.

Picture sentences, page 8

1. b,c,a
2. Most solids are metals. (Most metals are solids)
   Plastics are all around us.
   Glass is a ceramic material.

Odd one out, page 9
1. wood, horse, dog, food

Keywords, page 10
Galvanising (verb), enamelling (verb or noun), decorative (adjective), materials (noun)

Unscramble the letters, page 11

1. moulded, 2. aluminium, 3. precautions, 4. easily
   Secret Code: Metals are useful.

Completing Sentences, page 12

Although there are many **types** of metal, they can be classified into two main groups: ferrous and non-ferrous metals. Before we look at these, we must remember that a lot of metals we are used to are in fact a combination of several metals. These are called **alloys**.

FERROUS METALS

The Latin ferrum means iron. Ferrous metals, therefore, are **metals** that are made up predominantly of iron. Some examples of ferrous metals are cast iron, mild steel and tool **steel**. They are relatively cheap to produce and are **used** in thousands of everyday objects: cars, cutlery, tins, etc.

NON-FERROUS METALS

All other types of metals are referred to as non-ferrous metals.

These metals will not rust as they contain no **iron** . The five most

commonly used non-ferrous metals are:• aluminium, • copper, • lead, • zinc, • tin.

Multiple Choice, page 13

1.d,2.c,3.a,4.b,5.a

Grammar, page 14

1.Adjectives: brittle, ceramic, decorative, rusty, hard, metal, plastic, resistant, strong, shiny.

2. Ceramic and metal can be nouns and adjectives.

3. The sentence from the book is:

We think of metal as being hard, strong, shiny and heavy.

However, lots of other adjectives are possible.

4. The adjectives appear in this order in the sentences in your book. (However, other combinations are possible).

Light, good, **brittle, dull, bad**

clean, rust-free, grease-free

cheap, strong, tough, high

cheap, strong, flexible

Word Search, page 18