Wood Technology

Electronics

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

ampere
amplification
amplifier
anode
application
base
battery
board
buzzer
capacitor
cathode
charge
chip
circuit
collector
component
contact
current
delay
device
diode
electron
electronics
emitter
flow
gate
matrix
motor
output
polarity
relay
resistance
resistor
series
silicon
socket
switch
thermistor
track
transistor
type
voltage
voltage

Adjectives

electric
electronic
negative
potential
single
variable

Verbs

calculate
connect
describe
design
explain
flash
flow
incorporate
integrate
operate
solder
switch

Vocabulary file 1

Word	Meaning	Note or example*
transistor		
current		
voltage		
charge		
positive		
negative		

* 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.

Vocabulary file 2

Word	Meaning	Note or example
switch		
socket		
amplify		
connect		
battery		
circuit		

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:

Electronics

Electronic devices

- 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: Electronics

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

Working with words

1. Tick the correct answer

a) this is a switch

b) this is a battery

c) this is a nut

d) this is an engine

a) this is surf board

b) this an ironing board

c) this is a circuit board

d) this is a black board

2. Find these words in your textbook.

Write your own explanation for these words. Then write a note or example to help you remember the word. Use your dictionary if necessary.

Word	Page in textbook	Explanation	Note or example
circuit			
current			
voltage			
amp			

Check that these key words are in your personal dictionary.

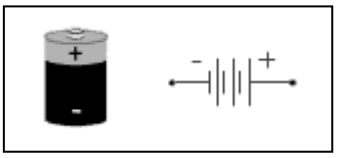
NAME: _____ DATE:_____

Wood Technology: Electronics

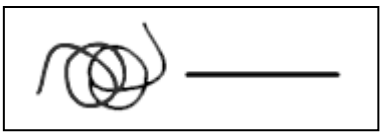
Language Level: A1
Type of activity: pairs or individual
Suggested time: 30 minutes

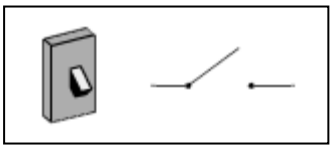
Picture Sentences

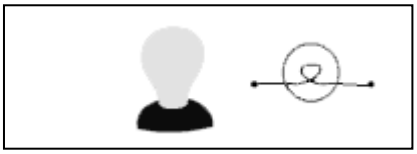
1. Look at your textbook, then match the picture of the circuit part to the four names.



a) Load
b) Voltage source
c) Conductor
d) Switch







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

are present /electronics / everyday lives/ in our

_____

is called/ of /electric charge/ current/ the flow

_____

two terminals/ /one positive /a battery/ has / one negative/ and

_____

NAME: _____ DATE:_____

Wood Technology: Electronics

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

Odd One Out

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

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

electric	electrons	current	buns
diodes	music	silicon	flow
song	transistors	amplification	switching
chip	matrix	weather	board

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

to flash _____

to solder _____

to flow_____

to switch _____

to connect _____

Check that these key words are in your personal dictionary.

NAME: _____ DATE:_____

Wood Technology: Electronics

Language Level: A2 / B1
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.

bu_ _er _____

sol_ _red _____

elec_ _on_cs _____

res_ _to_s _____

2. Write as many words as possible related to **Electronics/ this unit**.
You have 3 minutes!

_____

_____

_____

_____

_____

_____

_____

NAME: _____ DATE:_____

Wood Technology: Electronics

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

Unscramble the letters

1. A device that makes electrical signals louder FLARMIIPE

Answer _____

2. These are used as a source of power TEBARYT

Answer _____

3. When different things are joined to each other NECTECOND

Answer _____

4. When a thing changes all the time, it is… ABARVILE

Answer _____

Solve the secret code

English	A	C	E	G	I	N	R	S	T	U
Code	B	X	Y	F	W	Q	K	O	L	D

example: QWXY = NICE

XWKXDWLO BKY WQLYKYOLWQF =

_____

Language Level: A2 / B1
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.

If you remove the back of a television or a radio you are faced with an amazing array of wires and strange-looking components. However, despite this apparent complexity, all _____ devices are essentially simple in concept and operation. The systems approach _____ it as follows:

INPUT – PROCESS – OUTPUT
e.g. smoke from a burning chip pan enters a smoke detector, breaking a light beam (input); this is processed by a _____ and an alarm bell sounds (output).

All electronic devices depend on controlling the behaviour of tiny sub-atomic particles, called _____, by passing them through circuits made up of a number of _____ arranged in a particular way.

Word Box

describes	electronic	components	electrons	circuit

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

Multiple choice

Read the text below and choose the best answers.

Following the development of the transistor, further research showed that several separate transistors could be placed on a single tiny piece of silicon. The first **integrated circuit or IC** was produced in 1958, and intense research and development has led to ICs with thousands of components incorporated in them. As a result, today's computers are a fraction of the size of the first models yet many times more powerful.
The ICs or chips are tiny and may be extremely complex. In order for them to be handled and placed in circuits, they are embedded in a plastic case with metal contact legs wired with gold thread to the chip's connections.
How DO THEY WORK?
Basically these integrated circuits form a series of gates or switches that count 0s and 1s. If two as come into a gate, say, then depending on the type of gate a 0 or a 1 may come out. This can occur several times until a final output is reached. For all their apparent sophistication, the smartest computers built from ICs or chips only count 1s and 0s.

1. When was the first integrated circuit produced?
   a) today b) 1895
   c) never d) 1958

2. What is the result of research into ICs?
   a) small powerful computers b) nothing
   c) less powerful computers d) thousands of computers

3. What is used to wire the metal contact legs to the chip's connections?
   a) a bed b) hands
   c) gold thread d) plastic

4. Do integrated circuits form a series of switches?
   a) Yes b) No

5. Do computers count only 0s and 1s?
   a) Yes b) No

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

Grammar point

The Passive Voice.

When we describe a process (*a series of actions or changes*) in English we use the passive voice.
We don't say: You form a circuit.
We say: A circuit is formed.
(*The action is important, not the person who does the action)*

The passive voice is formed by **be** (is/are/was/were) + **ed** (the past participle)
Examples: is formed/was formed/is made/was made

1. These sentences are from your textbook. Add the passive form of the verb.
Circuits

- A circuit _____ (form) when the terminal is connected to the bulb.
- A switch _____ (use) to prevent the current from flowing.
- When a conductor is attached to each terminal the electrons in the conductor _____ (push) by the negative terminal and attracted to the positive one.

Integrated circuits

- Integrated circuits are electronic circuits which _____ (incorporate) on a chip.
- The circuit _____ (form) on a silicon chip.
- This chip _____ (mount) on a small plastic cover.
- The chip _____ (connect) to the circuit board through pins which come out of the side of the chip.

2. Write up a process from your wood technology, science, or home economics courses.

For example: The equipment is set up……
The machine is switched on…

Write at least six sentences, then read them out to one another.

NAME: _____ DATE:_____
Wood Technology: Electronics

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: Electronics

Word search

Find the words from the list below.

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

ANODE
APPLICATION
BASE
BATTERY
BOARD
COMPONENTS
CURRENT
DEVICES
ELECTRONICS
EMITTER
FLOW
INCORPORATE
RESISTORS
SOCKETS
SOLDER
THERMISTOR
TRANSISTORS
VOLTAGE
VOLTAGES
OPERATE
POTENTIAL
RESISTANCE

Play Snap

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

current	**current**
resistance	**resistance**
flashing	**flashing**

connected	connected
calculate	calculate
make	make

transistors	transistors
negative	negative
single	single

polarity	polarity
base	base
describe	describe

Answer key

Working with words, page 7
1.b,c.

Picture sentences, page 8
1. (in anti-clockwise order)
Voltage source, conductor, load, switch
2. Electronics are present in our everyday lives.
The flow of electric charge is called current.
A battery has two terminals, one positive and one negative.

Odd one out, page 9
Buns, music, song, weather

Keywords, page 10
Buzzer (noun), soldered (verb or adjective), electronics (noun), resistors (noun)

Unscramble the letters, page 11
Amplifier, battery, connected, variable
Secret Code: circuits are interesting

Completing Sentences, page 12

If you remove the back of a television or a radio you are faced with an amazing array of wires and strange-looking components. However, despite this apparent complexity, all **electronic** devices are essentially simple in concept and operation. The systems approach **describes** it as follows:

INPUT – PROCESS – OUTPUT
e.g. smoke from a burning chip pan enters a smoke detector, breaking a light beam (input); this is processed by a **circuit** and an alarm bell sounds (output).

All electronic devices depend on controlling the behaviour of tiny sub-atomic particles, called **electrons**, by passing them through circuits made up of a number of **components** arranged in a particular way.

Multiple choice, page 13
1.d,2.a,3.c,4.a,5a

Grammar point, page 14
Circuits

A circuit **is formed** when the terminal is connected to the bulb.
A switch **is used** to prevent the current from flowing.
When a conductor is attached to each terminal the electrons in the conductor **are pushed** by the negative terminal and attracted to the positive one.
Integrated circuits
Integrated circuits are electronic circuits which **are incorporated** on a chip.
The circuit **is formed** on a silicon chip.
This chip **is mounted** on a small plastic cover.
The chip **is connected** to the circuit board through pins which come out of the side of the chip.

Word Search, page 15

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