Ready-Ed Publications

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PHOTOCOPY MASTERS

Practical Science

Energy and Change

for 10-12 year olds

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

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Contents

Teachers' Notes

This book contains a package of photocopiable worksheets designed to be used to cover the Science learning area of "***Energy and Change***" with 10-12 year old students.

At this level the students will be focusing on the enabling and impeding of energy and how energy is transferred through different materials. Students will research the different forms of energy and will be involved in constructing, testing and gathering data on electric circuits as well as drawing and explaining how an electrical appliance functions. Activities also include carrying out an extensive home and school survey regarding energy use, which will be followed up with an assessment.

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 28).

Other books in the Practical Science series:

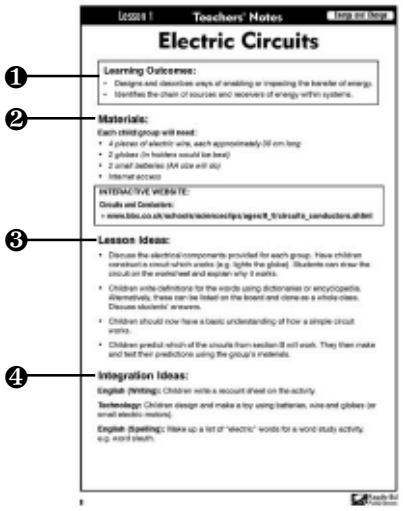
- *Earth and Beyond*
- *Life and Living*
- *Natural and Processed Materials*
- *Working Scientifically*

Lesson Sheets Layout

STUDENT LESSON SHEET

❶ Lesson title

❷ Student learning activities



TEACHERS' NOTES INCLUDE:

(FOR EACH LESSON)

❶ Outcome links;

❷ Required materials;

❸ Lesson plan ideas including extension ideas and teaching tips;

❹ Cross-curricular/integration ideas.

Electric Circuits

Learning Outcomes:

- Designs and describes ways of enabling or impeding the transfer of energy.
- Identifies the chain of sources and receivers of energy within systems.

Materials:

Each child/group will need:

- *4 pieces of electric wire, each approximately 30 cm long*
- *2 globes (in holders would be best)*
- *2 small batteries (AA size will do)*
- *Internet access*

INTERACTIVE WEBSITE:

Circuits and Conductors:

www.bbc.co.uk/schools/scienceclips/ages/8_9/circuits_conductors.shtml

Lesson Ideas:

- Discuss the electrical components provided for each group. Have children construct a circuit which works (e.g. lights the globe). Students can draw the circuit on the worksheet and explain why it works.
- Children write definitions for the words using dictionaries or encyclopedia. Alternatively, these can be listed on the board and done as a whole class. Discuss students' answers.
- Children should now have a basic understanding of how a simple circuit works.
- Children predict which of the circuits from section B will work. They then make and test their predictions using the group's materials.

Integration Ideas:

English (Writing): Children write a recount sheet on the activity.

Technology: Children design and make a toy using batteries, wire and globes (or small electric motors).

English (Spelling): Make up a list of "electric" words for a word study activity, e.g. word search.

Electric Circuits

A

Making a Circuit: Use two pieces of wire, a battery and a globe to make an electric circuit which will light the globe. Draw your circuit:

Explain why this circuit works.

(**Tip**: Use words like “current”, “positive” and “negative”.)

B

Write a definition for these terms:

❶ battery: _____

_____

❷ circuit: _____

_____

❸ current: _____

_____