Ready-Ed Publications

E-book Code: REAU4030

PHOTOCOPY MASTERS

Practical Science

Energy and Change

for 8-10 year olds

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

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Published by Ready-Ed Publications (2007)

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ISBN 1 86397 678 7

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 8-10 year old students.

At this level the students' focus is centred on how energy and machines work together. Students will explore how energy is used in daily life and understand how energy transfer takes place. Tasks involve gathering and presenting data, conducting surveys, studying and using simple tools. Specific activities focus on using pulleys, observing heat transfer from the sun and water, carrying out a home energy survey and researching energy saving ideas.

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.

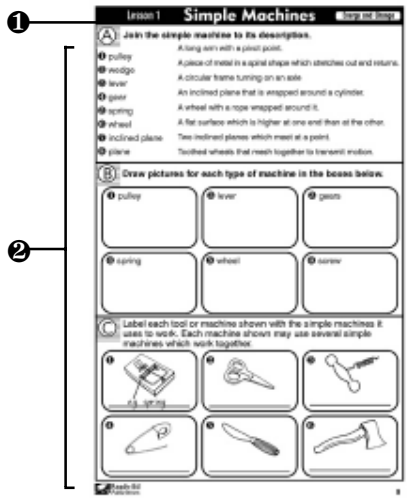
All lesson sheets are outcome linked to the various curriculum documents (see page 6).

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*

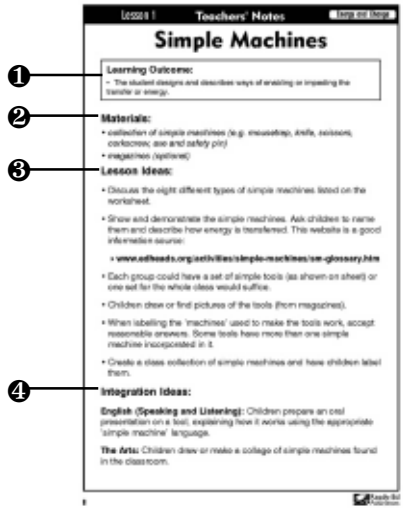
Lesson Sheets Layout



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.

Simple Machines

Learning Outcome:

- The student designs and describes ways of enabling or impeding the transfer or energy.

Materials:

- *collection of simple machines (e.g. mousetrap, knife, scissors, corkscrew, axe and safety pin)*
- *magazines (optional)*

Lesson Ideas:

- Discuss the eight different types of simple machines listed on the worksheet.
- Show and demonstrate the simple machines. Ask children to name them and describe how energy is transferred. This website is a good information source:
  - **www.edheads.org/activities/simple-machines/sm-glossary.htm**
- Each group could have a set of simple tools (as shown on sheet) or one set for the whole class would suffice.
- Children draw or find pictures of the tools (from magazines).
- When labelling the "machines" used to make the tools work, accept reasonable answers. Some tools have more than one simple machine incorporated in it.
- Create a class collection of simple machines and have children label them.

Integration Ideas:

English (Speaking and Listening): Children prepare an oral presentation on a tool, explaining how it works using the appropriate "simple machine" language.

The Arts: Children draw or make a collage of simple machines found in the classroom.

Simple Machines

A Join the simple machine to its description.

❶ pulley	A long arm with a pivot point.
❷ wedge	A piece of metal in a spiral shape which stretches out and returns.
❸ lever	A circular frame turning on an axle.
❹ gear	An inclined plane that is wrapped around a cylinder.
❺ spring	A wheel with a rope wrapped around it.
❻ wheel	A flat surface which is higher at one end than at the other.
❼ inclined plane	Two inclined planes which meet at a point.
❽ plane	Toothed wheels that mesh together to transmit motion.

B Draw pictures for each type of machine in the boxes below.

❶ pulley

❷ lever

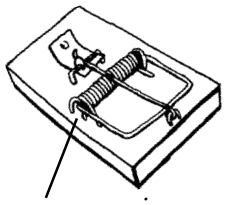
❸ gears

❹ spring

❺ wheel

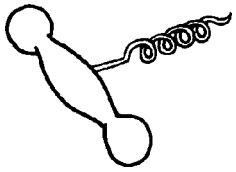
❻ screw

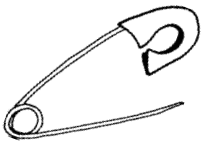
C Label each tool or machine shown with the simple machines it uses to work. Each machine shown may use several simple machines which work together.

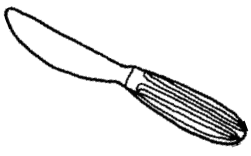
❶ 

e.g. spring

❷ 

❸ 

❹ 

❺ 

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