Ready-Ed Publications

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PHOTOCOPY MASTERS

Practical Science

Working Scientifically for 10-12 year olds

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

Written by Kevin Rigg Illustrated by Terry Allen.
Edited by Jane Bourke. Design and Typesetting by Shay Howard.
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Email: info@readyed.com.au Website: www.readyed.com.au

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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 "***Working Scientifically***" with 10-12 year old students.

At this level the students will be involved in conducting simple tests, gathering data, collating information and drawing conclusions. Students will use familiar situations to test ideas and be able to draw their own conclusions. Skills developed include graphing, timing, illustrating, labelling, writing descriptions, designing tests and data tables, questioning the fairness/validity of tests, following written instructions and interpreting results. Specific activities explore magnets, pendulums and bridge construction.

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

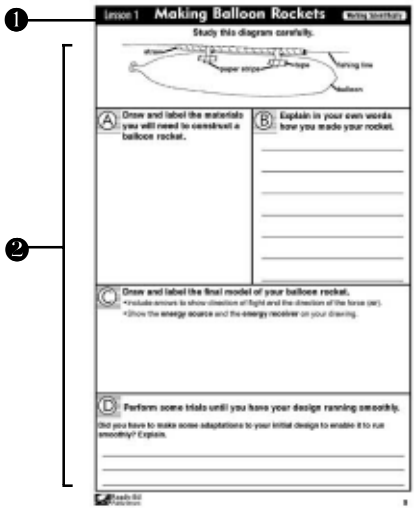
The equipment needed has been kept to a minimum to facilitate ease of planning. It is readily available in schools or is easily acquired.

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

Other books in the Practical Science series:

- *Energy and Change*
- *Life and Living*
- *Natural and Processed Materials*
- *Earth and Beyond*

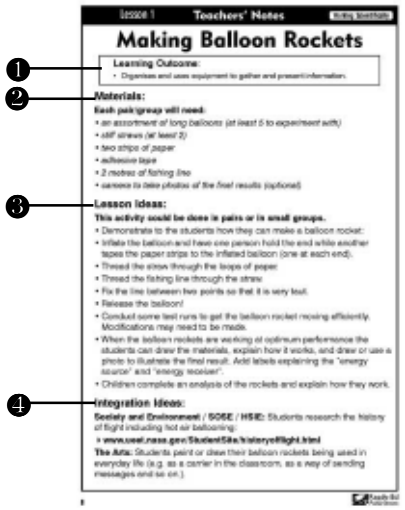
Lesson Sheets Layout



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.

Making Balloon Rockets

Learning Outcome:

- Organises and uses equipment to gather and present information.

Materials:

Each pair/group will need:

- *an assortment of long balloons (at least 5 to experiment with)*
- *stiff straws (at least 2)*
- *two strips of paper*
- *adhesive tape*
- *2 metres of fishing line*
- *camera to take photos of the final results (optional)*

Lesson Ideas:

This activity could be done in pairs or in small groups.

- Demonstrate to the students how they can make a balloon rocket:
  - ⇨ Inflate the balloon and have one person hold the end while another tapes the paper strips to the inflated balloon (one at each end).
  - ⇨ Thread the straw through the loops of paper.
  - ⇨ Thread the fishing line through the straw.
  - ⇨ Fix the line between two points so that it is very taut.
  - ⇨ Release the balloon!
- Conduct some test runs to get the balloon rocket moving efficiently. Modifications may need to be made.
- When the balloon rockets are working at optimum performance the students can draw the materials, explain how it works, and draw or use a photo to illustrate the final result. Add labels explaining the "energy source" and "energy receiver".
- Children complete an analysis of the rockets and explain how they work.

Integration Ideas:

Society and Environment / **SOSE** / **HSIE:** Students research the history of flight, including hot air ballooning:

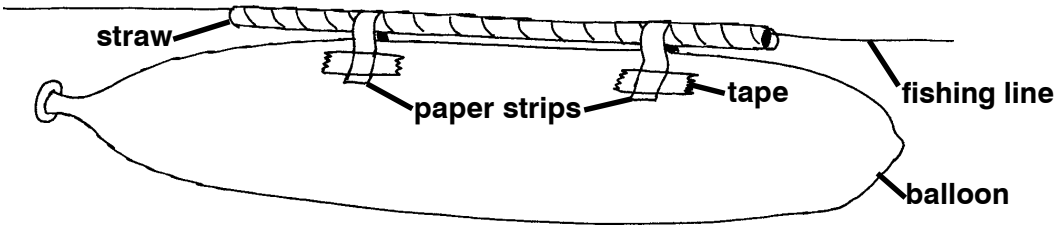
- **www.ueet.nasa.gov/StudentSite/historyofflight.html**

The Arts: Students paint or draw their balloon rockets being used in everyday life (e.g. as a carrier in the classroom, as a way of sending messages and so on).

Lesson 1 Making Balloon Rockets

Working Scientifically

Study this diagram carefully.



A **Draw and label the materials you will need to construct a balloon rocket.**

B **Explain in your own words how you made your rocket.**

C **Draw and label the final model of your balloon rocket.**

- Include arrows to show direction of flight and the direction of the force (air).
- Show the **energy source** and the **energy receiver** on your drawing.

D **Perform some trials until you have your design running smoothly.**

Did you have to make some adaptations to your initial design to enable it to run smoothly? Explain.