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(For Upper Primary)

A Pacemaker Pack

Space Exploration

*Activities to Extend Talented Students in
the Regular Classroom*

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Teachers' Notes

This fully revised series was initially devised as a means of providing extension for students within the regular classroom, whilst catering for the needs of the teacher and providing materials that were designed along educationally sound lines.

Although the content and layout for the revised series has been completely updated, the principles behind the series remain the same, using **CONTENT LEVELS** as a basis for categorising activities. The key to this approach, which we term the appropriate curriculum model, is that students are presented with activities appropriate to their levels of understanding of the content together with their mastery of the requisite higher-order thinking processes. The levels are an adaptation of Bloom's Taxonomy of Educational Objectives, still a widely accepted and valued model of education.

Below are the Content Levels and Indicators used in this book:



Content Level 1

What it means

FINDING OUT: Recalling data, showing understanding through restating or extending ideas.

What the student does

Answers factual questions, interprets information, describes or illustrates events.



Content Level 2

What it means

USING INFORMATION: Using information in a new situation through extending or breaking down concepts being studied.

What the student does

Problem solving based on knowledge gained. Making assumptions.



Content Level 3

What it means

CREATING / EVALUATING: Putting together ideas to develop new products, making judgements based on new information.

What the student does

Puts forward theories or original ideas and designs, forms and states opinions on theories.

Moving Through the Content Levels

It is important that higher-order activities such as those at Content Level 3 are underpinned with a solid base of knowledge – the tasks and activities aligned with Levels 1 and 2 are designed to establish and expand this. It should never be assumed that students have the requisite content knowledge, but be prepared to advance students quickly to higher-level activities if they demonstrate a sound understanding of the facts and concepts presented in Levels 1 and 2.

In considering the structure of this material, it is envisaged that in the heterogeneous classroom situation, the series can be implemented as follows:

Child Ability Level

Interpretation

- Above Average _____ Emphasis on Level 2/3
- Average _____ Emphasis on Level 2
- Below Average _____ Emphasis on Level 1

Many pages contain activities from more than one level. In this case, the **TIME** taken on each part will change focus, according to the outline above.

Teachers' Notes

Using the Pacemaker Packs in the Classroom

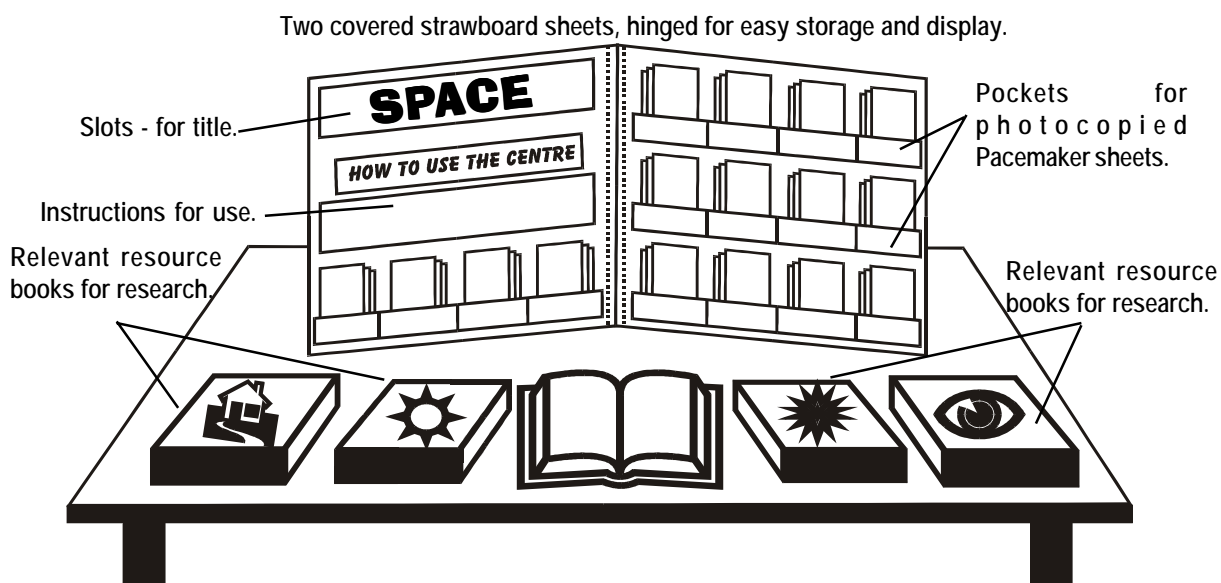
※ **Promote interest in the theme – Set up a classroom learning centre that may contain:**

- Books and posters;
- Models and artefacts;
- CD-ROMS;
- Art supplies and plenty of writing and drawing paper;
- A “theme” table with items brought by students from home.

※ **Decide on the approach to the theme that suits you and your students best:**

- Teacher - directed with the whole class completing teacher-assigned sheets at a specified time (teacher records progress).
- Student - directed with students working through materials at their own pace at a specified time (student records progress).
- As an interest-based approach with students working from a selection of photocopied worksheets at their own pace (student monitored and recorded).
- As supplementary materials to a unit of study.

You may wish to use this series as a Learning Centre, with photocopied sheets displayed in pockets that students can select from, perhaps set up like this:



Before commencing, talk over the activities contained in the book with your class. Encourage students to broaden their thinking to suit the open-ended nature of the upper - level activities, helping them to understand that there is not “one correct answer”.

Outline a procedure for the activities:

- How will students store and present their completed worksheets? (In a file, a booklet, a plastic sleeve.)
- How can students work on the contents? (Individually, in pairs, in small groups.)
- From where can further research sources be obtained?
- What people or organisations might be able to help?
- How and when will the sheets be available?

Galactionary

Name: _____



Use dictionaries, books or Internet references to find out the meaning of these “spacey” words. Add examples or interesting facts if you spot them.

Aerodynamic: _____

Cryonics: _____

Black Hole: _____

Constellation: _____

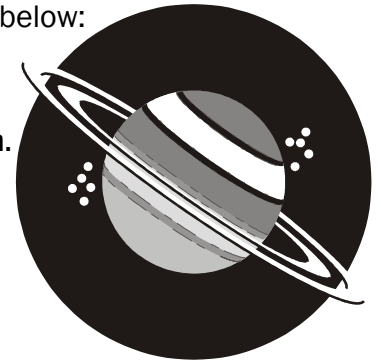
Juggernaut : _____

Light Year: _____

Satellite: _____

Fill in the blanks by doing a number facts search on the ideas below:

- The Earth is _____ times larger than the moon.
- The gravity of the Earth is _____ times greater than that of the moon.
- Saturn is _____ times larger than Earth.
- The gravity of Saturn is _____ times greater than that of the Earth.



In the space below write an acrostic poem about gravity:

G _____

R _____

A _____

V _____

I _____

T _____

Y _____

Ask your teacher to help you search up on some experiments on gravity (try <http://schooldiscovery.com>) and make up an experiment of your own. Write it on the back of this page. Include materials, method, predictions and findings.



Related Outcome: Students will use references to research basic vocabulary and facts about space.
Subject: English - Reading; Science - Earth & Beyond.

Who Came First?

Name:

.....
.....



Research to find out about these **SPACE FIRSTS**.

FIRST

WHO

WHEN

Hot air balloon

Animal in space

Man in space

Woman in space

Person on the moon



Choose one of the above and describe the event in less than 100 words. Make sure you read carefully to get the important facts right.

Event: _____

.....
.....
.....
.....
.....
.....
.....
.....
.....

Sample



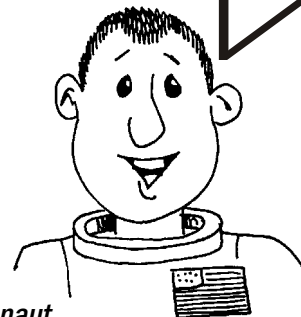
In the speech bubbles below, list the positives and negatives of sending animals such as dogs and chimpanzees into space. Which do you agree most strongly with?

.....



Animal Protection Activist

.....



NASA Astronaut



Related Outcome: Students will consider historical events in space travel by exploring a variety of facts and opinions.

One Giant Leap

Name: _____

Who do you know that was at school on July 16, 1969 when the engines of the Saturn V rocket were fired and over 500 million people all over the world watched their TV screens to see the moon-bound rocket take off? Astronauts Neil Armstrong, Edwin Aldrin and Michael Collins were aboard the Apollo 11 spacecraft preparing for the historic journey to the moon.

Four days later, Aldrin and Armstrong left Collins orbiting the moon whilst they manoeuvred a lunar module towards the moon's surface.

It was 20:17 hours GMT (Greenwich Mean Time) on July 20, 1969 when Neil Armstrong stepped on to the moon and spoke the now famous words:

"That's one small step for man ... one giant leap for mankind."

In actual fact, the quote should have been "That's one small step for a man ... one giant leap for mankind" (think about how this makes more sense) but either Armstrong, in his excitement, made a small slip up and forgot the "a", or the static in the transmission masked the word (depending on the source).

In any case, this remains one of the best-known historical quotes today!

(Continued next page.)

