

Science Mastery Series

LISC[®] Processes & Skills

For Upper Primary Science

The **DEFINITIVE**
PSLE Science
Processes & Skills
Handbook

A must-have
Science
handbook



**Processes
& Skills
defined**

Alda Lim

Cedric Chai

PB, M.A. (Ed.), PGDE, B.Bus. (Hons), Dip.D.M.; PGDE(Merit), B.Eng (CSE);

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Tel: 6 2555 941
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For orders and enquiries:
Email: enquiry@scienceheuristics.com.sg

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CHAPTER 3 AIM AND PURPOSE

DEFINITION

Cumulating from the various processes and skills, the *Aim and Purpose* of an experiment are the most commonly encountered terms by students in assessments and examinations. The Aim / Purpose of an experiment lists the objective of an experiment, identifying the required variable to be tested and the expected effect on the experiment.

The formulation of a proper, scientific Aim statement using the **LiSC[®] Approach** will be discussed in this chapter. This will be firstly modelled by examples and explanation followed by the LiSC[®] Skill template before further practices. (See **HOW TO USE THIS BOOK**)

In examinations and assessments, students are tested in the following manner:

- To state the aim or purpose of an experiment
- To answer questions related to a given aim of the experiment for a situation

Aim and Purpose

LiSC[®] for examinations

To provide an Aim statement for a particular experiment or to provide explanations for related questions based on the Aim.

LiSC[®] skill template

To find out if/how/whether/which **Changed Variable** affects the **Results/Concept tested in the experiment.**

Example:

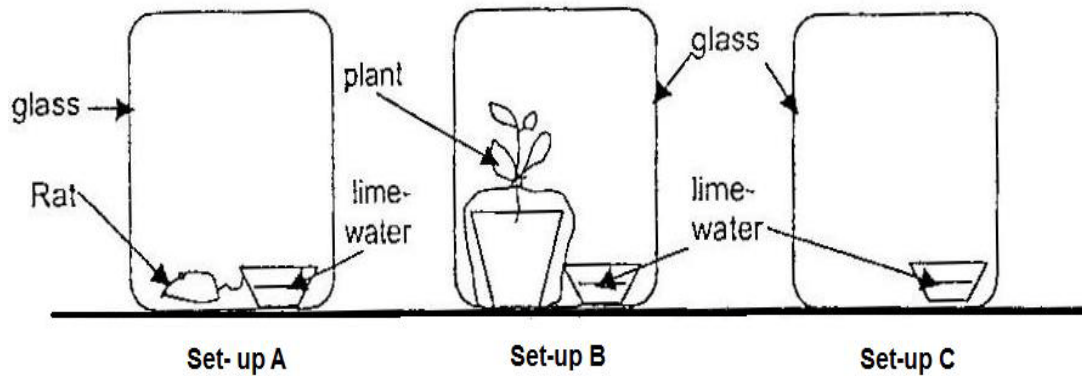
To find out how the **amount of carbon dioxide** affects the **rate of photosynthesis** of plants.

LiSC Processes

EXAMPLES

2. LIFE SCIENCE

A group of students set up an experiment as shown below.



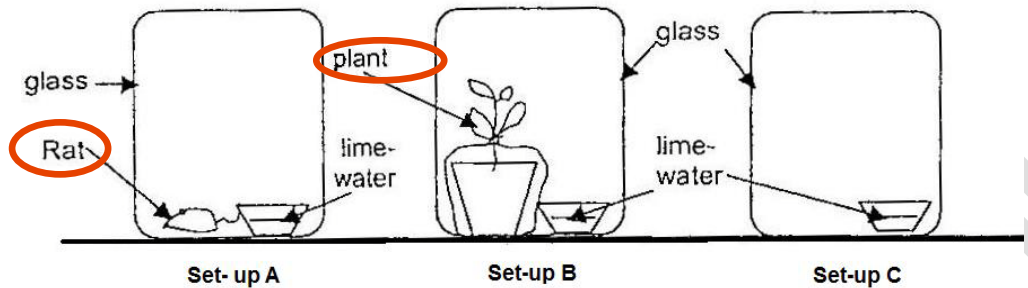
They left the 3 glass container on a table in a well-ventilated room. After a day, they noticed that the limewater in set-up A had turned chalky and that in set-up B had turned slightly chalky. However the limewater in set-up C remained clear.

What was the group of students trying to show in their experiment?

ANSWER

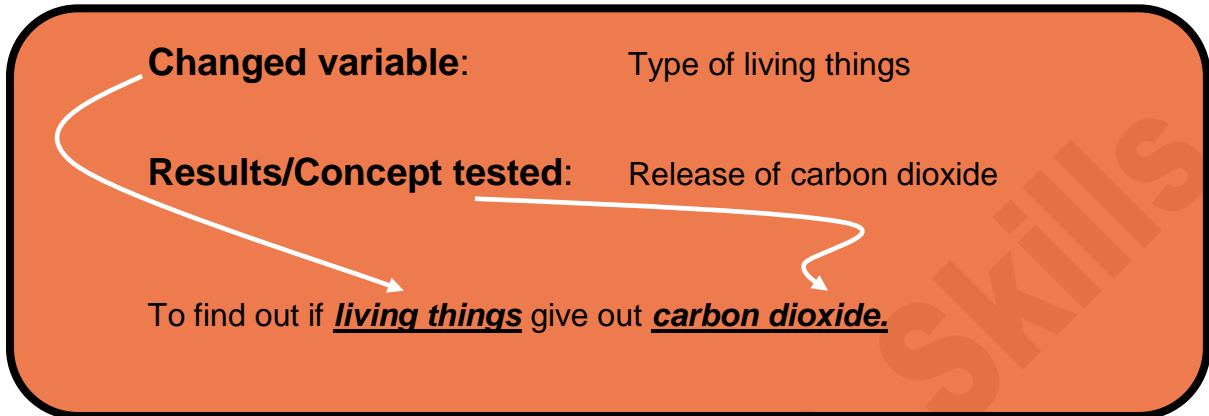
To find out whether living things give out carbon dioxide.

EXPLANATION



Applying the LiSC [®] approach (to Processes & Skills)	Formulation of Answer	Detailed Explanation
<p>Identifying variables / actions</p>	<p>Rat , Plant Limewater turned chalky</p>	<p>Identify the difference in the set-ups in terms of items and the results of the experiment.</p>
<p>Linking variables / actions to relevant concepts</p>	<p>Rat, Plant → living things → respire Limewater → test for carbon dioxide</p>	<p>Classifying the items to provide a common heading. Linking the indicator (limewater) to its test items.</p>
<p>Result / Outcome</p>	<p>Changed variable – types of living things Dependant variable – release of carbon dioxide</p>	<p>Derivation of tested concept in experiment as well as the common changed variable.</p>

LiSC[®] skill template – Aim and Purpose



LiSC Processes & Skills

CHAPTER 10 FINAL NOTE

Qualifications

This is *NOT an assessment book*. It is a *Handbook to Science Processes & Skills*. The primary objective of this book is to guide students and parents towards a systematic approach in tackling commonly tested science process skill items (questions involving experimental set-ups / scientific investigations). Hence, the questions provided are meant as illustrations and guides to the various approaches for the processes and skills rather than voluminous number of questions for drill and practice.

It is important to note that only parts of the entire question are used in the examples in this book. This helps to ensure that the right focus and attention is given to the specific processes and skills covered without distracting readers with other unrelated parts.

The parts omitted from the examples are usually the fundamental process skills section of the questions or the direct knowledge application parts. Focus has instead been given to the Application and Higher Order parts of the questions, often the most demanding and daunting for students.

Application

Another important note is the wider Application of the *LiSC® Processes & Skills*. Much as the examples have been restricted to the Open-Ended Section of the examination paper, the technique can be simply applied across the Multiple Choice Section of the examination paper using the same exact mode of approach and analysis.

In Summation

The approaches (in the sections - *LiSC® for examinations*) systematically compartmentalize and clearly define the various processes and skills required for our current examinations and assessments requirements. With understanding and adequate practice of the processes and skills covered in this book, students will gain the right analytical path for the application of processes and skills in examination settings. With that, students not only become effective applicators of knowledge, they would have also gained substantial insight into a proven and powerful meta-cognitive problem solving approach.

As the summary purpose of this book is to *bridge the gap* between Acquired Knowledge (Knowledge with Understanding) and Applied Situations, a good grounding and foundation laid in the acquisition of textbook Knowledge is fundamental. However, understanding of knowledge and concepts must never be confused with mere memorising of scientific facts or principles.

With the right fundamentals (*LiSC® Concepts Evaluation*), a clearly defined set of processes and skills (*LiSC® Processes & Skills*) combined with a proven answering approach (*LiSC® Answering Technique*), your bag of tools to ace PSLE Science is full and complete.

NOTES

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