Active Learning Approach to Answering Science MCQs and the Joy of Learning Science

Workshop for Parents

31 Mar 2023 (Fri)

Joy of Learning Science

Is Learning Science all about an memorising an organised collection of facts?

How can we get our child to get excited about Science?

Role of parents in nurturing Joy of Learning Science

As a parent, you are your child's first and most influential teacher.

Your child is on a passionate quest to understand their world.

Your child is curious about their environment and begin to interact with their surroundings.

You can provide rich sensory experiences (5 senses) to help your child to become more observant and curious.

Theme: Diversity

There is a great variety of living and non-living things in the world and we classify things to better understand the world in which we live in.

Topics

- Living Things (P3)
- Materials (P3)

Theme: Cycles

There are repeated patterns of change in nature such as life cycles of living things.

<u>Topics</u>

- Life Cycles (P3)
- Matter (P4)

Theme: Systems

A system is a whole consisting of parts that work together to perform a function.

<u>Topics</u>

- Plant Parts (P3)
- Digestive System (P4)

Theme: Interactions

There are interactions among Man, living and non-living things in the environment.

<u>Topics</u>

- Magnets (P3)

Theme: Energy

Energy makes changes and movement possible in everyday life.

<u>Topics</u>

- Light (P4)
- Heat (P4)

Learning Science

- At Home
- Through Exploring
- Through Questioning
- Through Projects
- Through the Web
- Through Stories

Learning Science through Exploring (Living Things)

Going on a DIY Walk

- https://www.nparks.gov.sg/gardens-parks-and-nature/walks-and-tours/going-on-a-diy-walk

Learning Science through Questioning (Living Things)

<u>Observing living things</u>

An example of a living thing – Fish:

- How would you describe this animal?
- Which animal group does it belong to?
- What do fishes have in common?

Learning Science through Questioning (Plant Parts)

<u>Comparing living things</u>

Examples of different types of plants:

- How are the plants similar?
- How are the plants different from each other?

Learning Science at Home (Materials)

- The home and our surroundings have a rich source of materials for students to interact with
- Describe the materials using the scientific definition of the properties
- Think why certain objects are made of certain materials
- Build toys at home and explain choice of materials

Learning Science at Home (Magnets)

- Magnet Kit
- https://www.fairprice.com.sg/product/play-n-learn-stem-science-6-experiments-on-magnetism-kit-1-pc-90030572
- Look around the house for items made with magnets and magnetic materials
- Build toys using magnets and explain how they work

Learning Science at Home (Life Cycles)

- Buy butterfly kits or mealworms and observe the life cycles
- https://www.sassymamasg.com/digital-detox-nature-kids-caterpillars-pets/
- Watch videos of animal life cycles on documentaries

Learning Science through Exploring (Life Cycles)

- Visit Gardens by the Bay or nurseries and learn about different plants and their life cycles
- https://www.gardensbythebay.com.sg/en/learn-with-us/explore-resources/crafts-and-worksheets.html
- Visit the zoo and learn about different animal life cycles

Learning Science at Home (Matter)

- Get involved in cooking by measuring out the ingredients needed
- Explore ingredients whether they are solids or liquids
- Pour liquids from containers to containers using funnels

Learning Science at Home (Light)

- Light kits
- https://www.ilightsingapore.gov.sg
- Build light-related toys, e.g. periscope, pinhole cameras
- Put up DIY shadow puppet shows

Learning Science through Exploring (Light)

- Explain the shadows they see around them e.g. under the lamp post
- Make and carry lanterns for different festivals
- Visit Science Centre exhibitions
- https://www.science.edu.sg/whats-on/exhibitions/laser-maze-challenge
- https://www.science.edu.sg/whats-on/exhibitions/professor-crackitts-light-fantastic-mirror-maze

Learning Science through Questioning (Light)

Why is there a mirror at the road corner?

Learning Science at Home (Heat)

- Describe the heat exchange on cold days and hot days
- Explore the kitchen for how utensils are designed and different ways of cooling things down and heating things up
- Discuss the clothes we wear on cold days and hot days

Learning Science through Exploring (Digestive System)

- https://www.science.edu.sg/whats-on/exhibitions/know-your-poo
- https://yakult.com.sg/yakult-factory-tour/

Learning Science through Projects

- Do longer-term projects through subscription boxes
- https://www.kiwico.com

Learning Science through the Web

Experiments, videos and fun activities are great ways to engage children too! Check out some of these online educational resources which you can try out together with your children:

- Try out these simple experiments with your children .
  - http://www.science.edu.sg/resources/Pages/SCBResourcesHome.aspx
- Look through this online repository for activities that explain simple science concepts.
  - http://www.scientificamerican.com/section.cfm?id=bringsciencehome
- Watch video clips illustrating science concepts.
  - http://www.bbc.co.uk/education/subjects/z2pfb9q
- Find interesting facts, videos, games and quizzes.
  - http://www.sciencekids.co.nz/

Learning Science through Stories

- Choose stories that interest your children
  - National Library
  - NASA website
  - Qrius website
- Discuss the science behind the stories
  - “Why do you think animals have to gather food before winter?”
  - “Do you notice that the caterpillar feeds on leaves but the pupa does not? Is the pupa a living thing?”
- Values education in science stories
  - For example, share how Thomas Edison displayed creativity and perseverance in his repeated failures before chancing upon the material that allowed the light bulb to glow.

MCQs (Booklet A) Let's Practice *ICE*

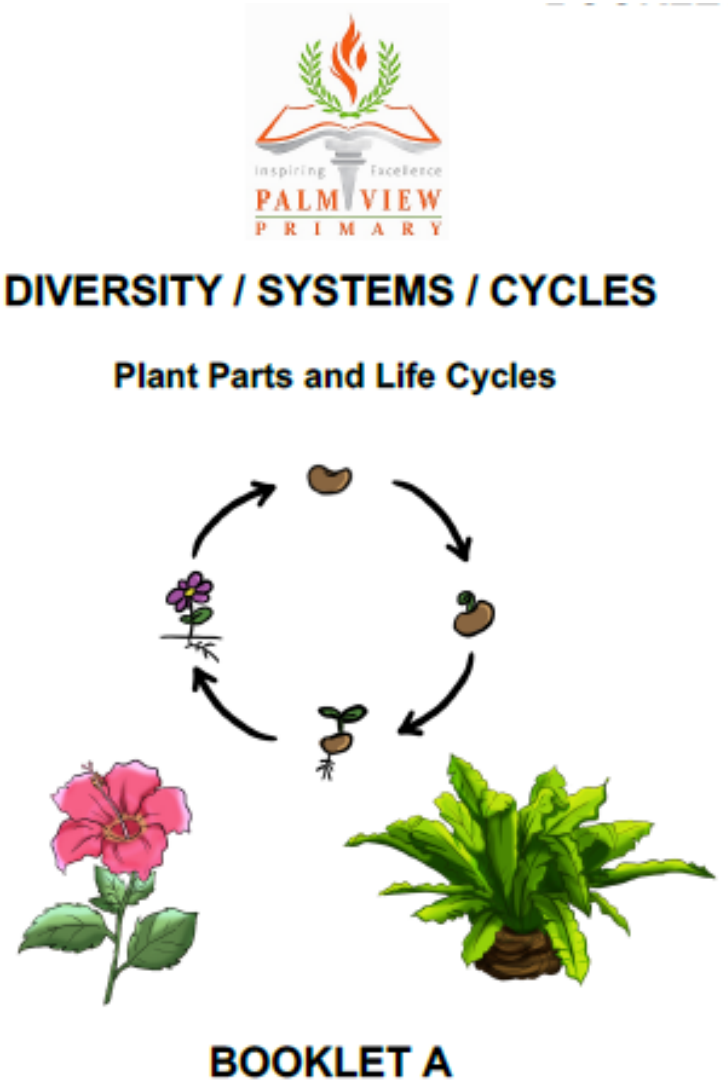
Step 1: Identification
Identify the topic(s) and LO(s)

Step 2: Concepts - Recall Concepts
Based on the LO(s) you have identified, write down what you have learn that can help you answer the question.

Step 3: Elimination - Eliminate wrong answers
*Based on what you have learnt, eliminate the options that are wrong by putting a cross (**X**) in the boxes beside the options.*

Let's Practice *ICE*

- P3 Plant Parts & Life Cycles
- Booklet A (MCQs)

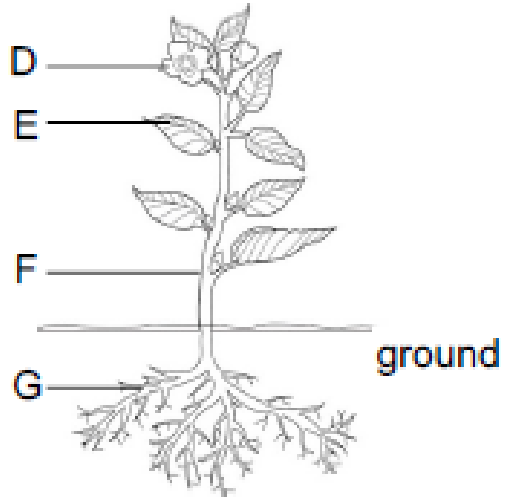


Let's Practice *ICE*

1 The diagram below shows a plant.

LO

[2]



Which part of the plant supports the plant to stay upright?

(1) D
(2) E
(3) F
(4) G

Let's Practice *ICE*

Topic: Plant Parts

LO2: Identify different parts of plants and state their functions:

a. leaf

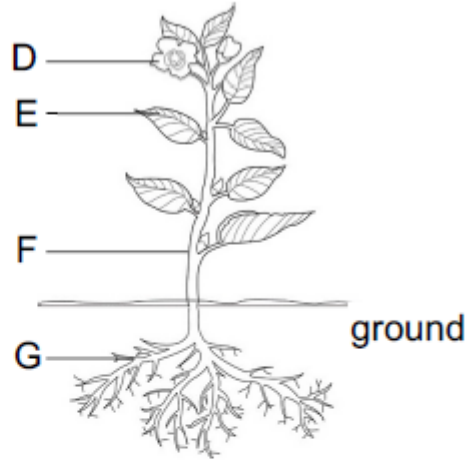
b. stem

c. root

1 The diagram below shows a plant.

LO

[2]



Which part of the plant supports the plant to stay upright?

(1) D
(2) E
(3) F
(4) G

Step 1: Identification

Identify the topic(s) and LO(s)

Step 2: Concepts - Recall Concepts

Based on the LO(s) you have identified, write down what you have learn that can help you answer the question.

LO2: Identify different parts of plants and state their functions:

(a) Leaf - absorb sunlight and make food for the plant and take in and give out air

(b) Stem - support the plant to stay upright and to allow the leaves of the plant to receive adequate sunlight

(c) Root - hold the plant firmly to the ground and absorb water and minerals

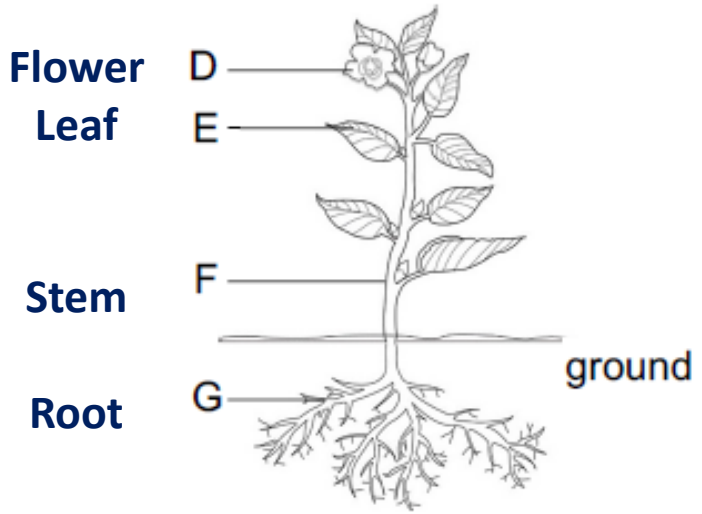
(d) Flower, fruit, seed - reproduction of the plants

Let's Practice *ICE*

1
LO
[2]

The diagram below shows a plant.

Topic: Plant Parts



Which part of the plant supports the plant to stay upright?

(1)	D	x
(2)	E	x
(3)	F	
(4)	G	x

(3)

Let's Practice *ICE*

- P4 Interactions – Heat
- Booklet A (MCQs)

ENERGY

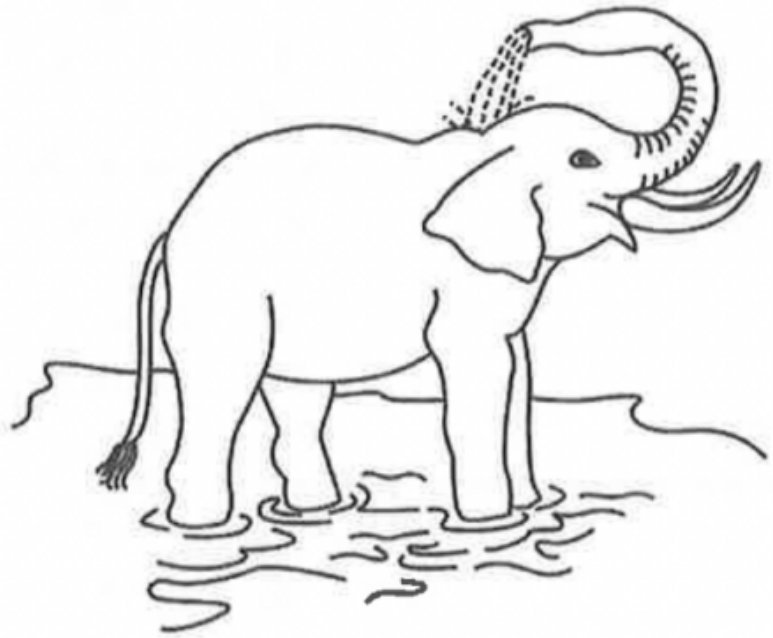
HEAT

#CuriousMinds #CaringHearts #CreativeSpirits

Step 1: Identification
Identify the topic(s) and LO(s)

2 An elephant sprays water on its body to cool itself.

LO [5]



Topic: Heat

LO [5]

Relate the change in temperature of an object to the gain or loss of heat by the object

Which of the following explains how the method helps the elephant to keep cool?

(1) The air gains heat from the water.
(2) The elephant's body gains heat from the body.
(3) The water gains heat from the elephant's body.

Step 2: Concepts - Recall Concepts

Based on the LO(s) you have identified, write down what you have learn that can help you answer the question.

- Things become colder when they loses heat.
- The temperature of an object decreases over time as it loses heat.

(Notes - pg 12)

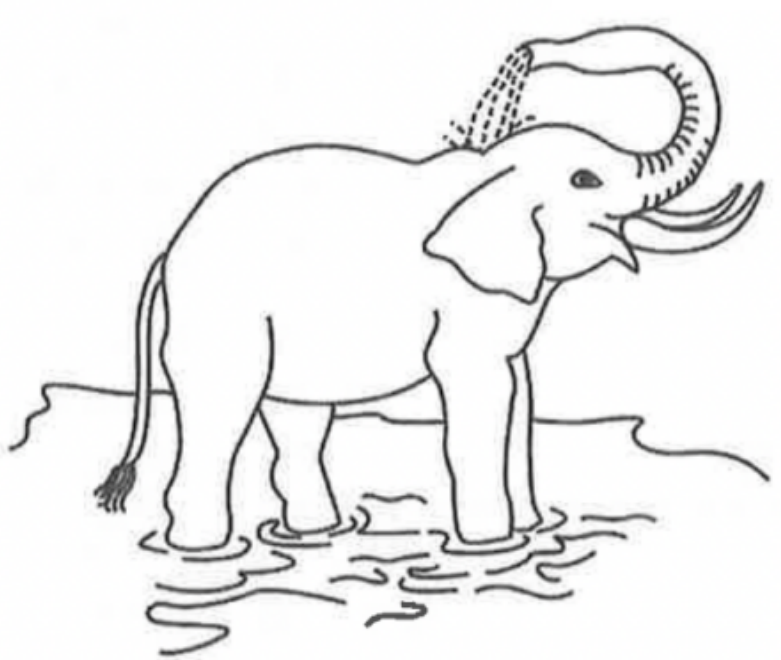
Step 3: Elimination - Eliminate wrong answers
*Based on what you have learnt, eliminate the options that are wrong by putting a cross (**X**) in the boxes beside the options.*

2 An elephant sprays water on its body to cool itse

LO [5]

Topic:

Heat



The water is at lower temperature & when it is sprayed onto the elephant's body, heat is transferred from the elephant's body to the water, thus the elephant cools down.

Which of the following explains how the method helps the elephant to keep cool?

(1) The air gains heat from the water. x
(2) The elephant's body gains heat from the body. x
(3) The water gains heat from the elephant's body.

Feedback

SCAN ME