

# 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.

- Living Things (P3)
- Materials (P3)







### Theme: Cycles

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

- Life Cycles (P3)
- Matter (P4)





### Theme: Systems



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

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





#### Theme: Interactions

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



#### **Topics**

Magnets (P3)





### Theme: Energy

Energy makes changes and movement possible in everyday life.



- 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)







► 6 Casuarina Exploration

xposure, salt sprays, and very windy conditions, mos

and Pasir Gudang in Malaysia. Before reclamation, steps



Stop by one of the Island's three bird-watching hides than objected or resident and ingratory citize assistance and the trunks and branches of thesi in search of prey, forested area.

Some common residents are the Collared Kingfisher (Todiramphuschloris), the most common. The beach of the bind is a light brown and its white

kingfisher in Singapore, and the Common Tailorbird.

in Singapore. This species is highly gregarious and roosts in large flocks which can number up to several



solp by one of the balacts time discretization in places. Easily international by the global repertor seathers.

In examination to the competing of the seather seather seather seather seather seathers. The examination is not to be called the seather seat

breast feathers are edged with a deep mahogany, > 3 Beach Area (Orthotomus sutorius). The tormer is a carnivore which consumes a variety of prey including fish, hatter to Southeast Ada, the Zebra Dove (Geopelia repities and craits. The latter is named after its unique strikel) is a small and stender bird with a long narrow

Other common residents are the Baya Weaver for prey such as mammals, reptiles and other birds. (Ploceus philippinus), which is able to create intricate new tungs strips of interlaced gass involved together with its strong beak, and the Long-tailed Parakeet

Be-eater (Merops viridis). It is named by the best property of the property (Psittacula longicauda) the only native parakeet | wasps and homets it consumes as part of its die

It is commonly seen flying along the coast with it

ability to stitch leaves together using just its beak to form the foundation of its nest. The female will piece foraging either alone or in pairs. critically endangered. The Dungun tree (Heritier

~ Your Guide to ≔ Coney Island Park



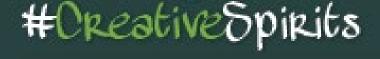
#### Going on a DIY Walk

https://www.nparks.gov.sg/gard ens-parks-and-nature/walksand-tours/going-on-a-diy-walk











## Learning Science through Questioning (Living Things)





#### Observing living things

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)







#### Comparing living things

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-stemscience-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-kidscaterpillars-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-withus/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





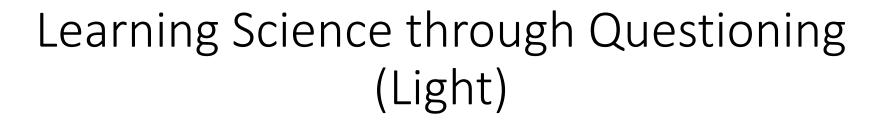




## Learning Science through Exploring (Light)

- 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-mazechallenge
- https://www.science.edu.sg/whats-on/exhibitions/professorcrackitts-light-fantastic-mirror-maze





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-yourpoo
- 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.
  - <a href="http://www.bbc.co.uk/education/subjects/z2pfb9q">http://www.bbc.co.uk/education/subjects/z2pfb9q</a>
- 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 /CE

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



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.







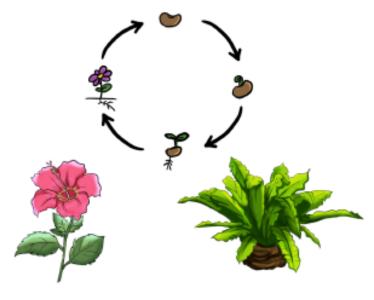
Booklet A (MCQs)





#### DIVERSITY / SYSTEMS / CYCLES

Plant Parts and Life Cycles



**BOOKLET A** 



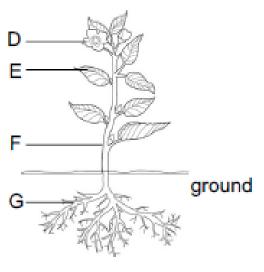






The diagram below shows a plant.

LO [2]



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









The diagram below shows a plant.

LO [2]

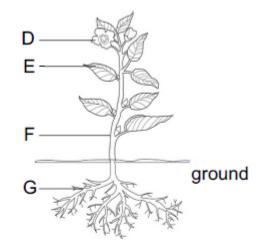
**Topic: Plant Parts** 

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

a. leaf

b. stem

c. root



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

(2)

(3)

(4)



Step 1: dentification 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





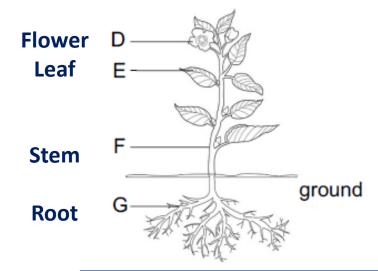




The diagram below shows a plant.

LO [2]

**Topic: Plant Parts** 



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

X

(3)









- P4 Interactions Heat
- Booklet A (MCQs)



**ENERGY** 

**HEAT** 



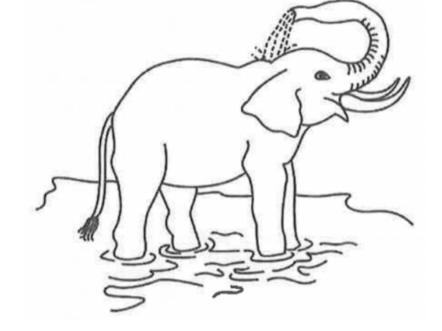


An elephant sprays water on its body to cool itself.

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

LO [5]

**Topic: Heat** 



#### LO [5]

Relate the change 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.
- 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)





An elephant sprays water on its body to cool itse Based on what you have learnt, eliminate the options that are wrong by putting a LO [5]

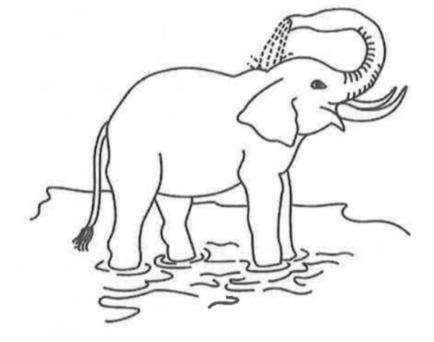
Step 3: Limination - Eliminate wrong answers

cross (X) in the boxes beside the options.



#### **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?

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





# **Feedback**







