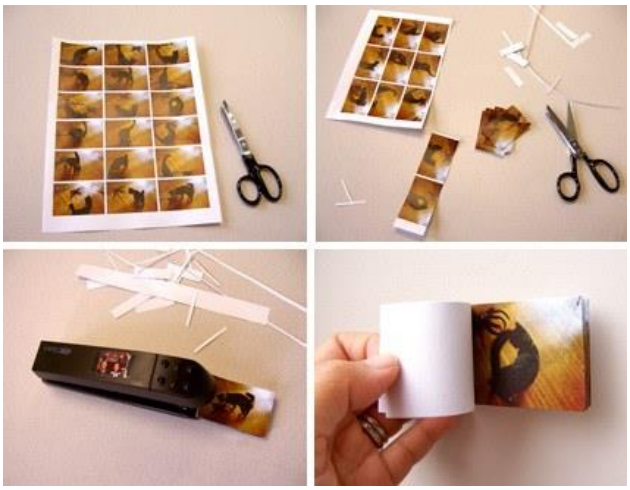
Activity 4: Making a Flipbook to describe the process of Adaptation and Extinction (Mass Extinction)



1 - A flipbook example

This activity enables you use your artistic and creative skills to understand the process of Adaptation and Extinction.
You will draw and complete a flipbook to describe the process of Adaptation or Extinction or you can choose to do both.
Keen?
Tighten Your Seat belt; it's going to be a creative journey!

Learning Intention

- **Understand the stages of an organism adapting or becoming extinct** due to an extreme situation.
- **Draw adapted features essential for survival or draw an organism which has not adapted** to the new environment
- **Using the story of the adaptation and extinction; make up the stages** of how the organism should look like after the mechanism.
- **Complete a flipbook and write creative descriptions**

Definitions

In order to understand how adaptation is different from extinction, we first need to know what they are.

Note: All the scientific definitions are explained by our scientist Guang Shi.

What is Adaptation?
”In context of biology and evolution, adaptation is a modification of morphological (physical) features of an organism so that it is better suited to its living environment. In other words, adaptation has a purpose, it is a mechanism to enable an organism to cope in its environment better.”
What is Extinction?
"Extinction is the disappearance of an organism in a short ecological time."
What is Mass Extinction?
"In palaeontology, extinction talks about mass extinction. Mass Extinction means disappearance of large amount of species from the geological record in a relatively short geological time."
Natural Selection
"Organisms survives and reproduces due to the adapted features it developed to best adjust to its environment via a natural process."
What is a Flipbook?
"A flipbook is a collection of combined pictures intended to be flipped over to give the illusion of movement and create an animated sequence from a simple small book without machine." (HISTORY, n.d.)

Let’s get Started!

What is the flipbook going to be about?

To make a flipbook, we first need a Story then a protagonist, in this case organism for the story (Obviously!)
In this activity, there are two stories, each will have two organisms:

- one adapting out of the disaster and
- the other unable to adapt, dying off, becoming extinct and then a fossil.

What you will be doing?

- You will have to choose one story and one organism and complete a flipbook showing and describing the stages and the process of adaptation ***or*** extinction accordingly.
- You will have to come up with your own depictions of the organism and show the adapted features ***or*** previously existed organism.

What do you need?

- Pick one of the stories you like from the next section
- Ruler
- Coloured Pencils
- Paper (Hard paper will be better for the flipping of the book)
- Scissors
- Stapler
- Creative thinking!

How are we doing it?

1. Choose one story and one organism. If you choose the organism which adapted, you would need to draw the completely new organism which evolved with its new physical features. If you choose the organism which died off and became extinct, you will have to draw the organism which previously existed and has not adapted.
2. The second story is a true story therefore if you choose the brachiopod (organism) which adapted and are still alive, find out about **one** brachiopod still living and adaptations it has to enable it to survive. And complete your flipbook.
3. You may print out the stories or display them on the screen.
4. On the paper rule out square grids so each grid will be one page of their flipbook.
5. Number the grids on the back so when the grids are cut out, so you do not get confused between the stages.
6. Draw in order of the start of the process of adaptation or extinction to the completely new organism. **YOU DO NOT HAVE TO DRAW OUT THE WHOLE SCENARY OF THE STORY.**
7. When finished, cut the grids and put them in order from number 1 to whatever number you have come up to.
8. Staple on the left-hand side to make it look like a book.
9. Now flip with right thumb each page slowly.
10. The book should tell the story of the adapted or extinct organism.
11. You should also write down on a separate paper to tell the reader the process showing the new features or the extinct organism in its new environment in which it could not cope.
12. This will help the flipbook reader understand why the animal is changing or dying in the book.

BONUS POINTS

- *You can choose to draw and complete two flipbooks based on both the organisms from the same story*

- *If you choose to draw the extinct organism, you can draw the fossil of the extinct organism at the end of your flipbook*

The Stories

Story 1: Finchania and Kinchania

A piece of island called 'Shi' separated from its mainland called 'Guangshi' due to a natural disaster.

Island Shi had a lot of changes in its environment and it became very different from its mainland Guangshi. Its air became colder and drier. Its soil became different and drier. It did not even have all the food it had previously. All the worms died which were usually eaten by birds that survived on these worms. However, a lot of spiders flourished, and the birds had no other choice than to eat these spiders.

Isolated from the rest of the world, overtime, some of the animals and plant species on this island developed adaptations to this new environment, but some could not develop the physical features needed to survive on this new island therefore they died.

'Finchania' was a bird that survive on island Shi. Finchania had some natural superpowers when it was born. As it grew older, it developed some physical features which were best to protect it from the cold and dry weather. It could eat spiders. As Finchania had enough food, it had enough nutrients so it could reproduce and survive on the island 'Shi'.

However, 'Kinchania', which was Finchania's older bird cousin, became sick day by day. It could not eat because it did not have the feature required to get and eat spiders. It felt so cold all the time due to the weather. Kinchania could not reproduce because it had no energy without food. It became hard for it to survive. After some weeks, Kinchania could not live anymore and passed away.

Millions of years later, a palaeontologist researches about extinct animals and finds the island 'Shi' and travels to it by boat.

There, he digs into the ground to look for fossils. He finds a fossil of an organism (It is Kinchania). He observes it closely and records its physical features. He figures out that it is a bird fossil. He then looks around the island for a similar living bird. He does not find anything *exactly* like it, but he finds a very similar looking bird (a very grand family member of Finchania). They both have a lot of common features.

He brings both of them back home and observes them even more. After a lot of hard work, he figures out that millions of years ago they both were once the same species! And they both once belonged to the same family. But due to something disastrous, one has adapted, and one has died because it could not adapt to the new environment. After more research, he figures out that this island used to be part of mainland 'Guangshi'.

He likes the bird and the fossil so wants to keep them. He names them as Finchania and Kinchania.

Hints:

Beak

Feather

Body Size

Story 2: Brachiopod; True Story

2 - Professor Guang's research Brachiopod

Background

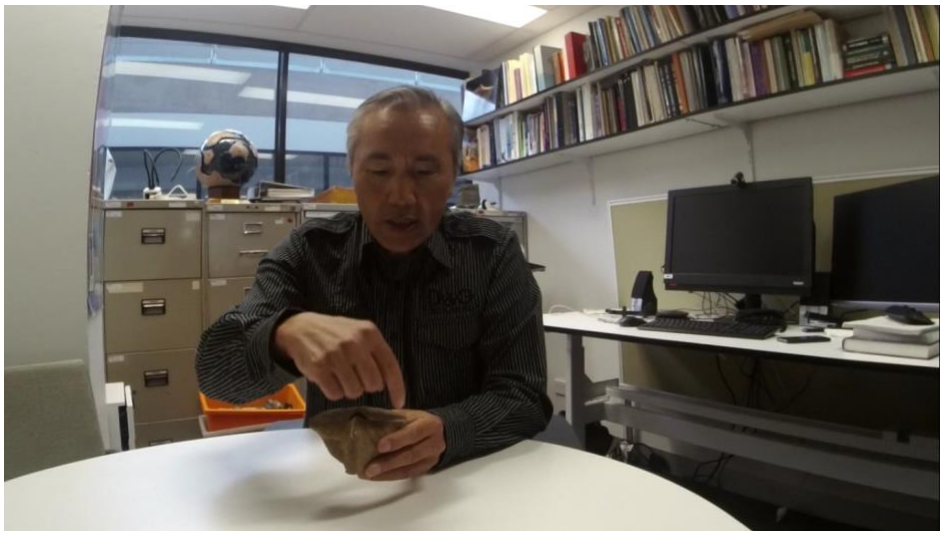
Name: *Brachiopods*

Kingdom: *Animalia (Marine)*

Phylum: *Brachiopoda (Invertebrate)*

Professor Guang says: *Brachiopods are shellfish and have hard shell outside and soft part inside. They were abundant in the geological time but are very rare in the today's time. Guang's brachiopod is 2 hundred 80 million years old. It has two valves and has a three-dimension shape.*

Why does it have that particular shape? Find the hints from the story!



3 - Professor Guang Shi, explaining the physical feature of a Brachiopod fossil he found during his research

4 - Professor Guang Shi telling the life story of a brachiopod fossil

Once upon a time, there was a shellfish called 'Brachiopod'. It lived deep down in the ocean with its family and a lot of friends. Brachiopod's shells were as two valves like an Oyster (the organism from which pearls are found). Brachiopod's two valves were attached to each other with a hinge so the valves could open from one side only like the mouth of a crocodile. The hinge had a hole in the middle so the soft part from inside the shell could take out its sticky hand to grab from a rock and attach to rocks for safety. Why? Because it got moved around if it did not stick to the ground.

The opening side of the brachiopod's shell opened and closed to help it feed and get fresh water filtered into the shell.

Suddenly a very huge volcano erupted, and the gas released in the air was absorbed by oceans which killed thousands of animals and plants, living in the ocean. Some of the family members of Brachiopod lived while the others died!

Brachiopod was so sad and depressed now. It could not take the huge wipe-out of his family. It started being ill all the time. There was no doctor to help it either. So it did not survive... Brachiopod became extinct...
But some of Brachiopod's friends survived. They were sad for losing their friend but stayed strong. The slowly adapted to the new environment and survived for a long time. There grandchildren are still alive, but they are not as many around anymore as there used to be.

Hints:

Valve

Hinge

Shape

Colour

*For this story, if you are choosing the brachiopod (organism) which adapted and are still alive, find out about **one** brachiopod still living and what adaptations has it made to still survive. And complete your flipbook.*
