Mealworms Life Cycle Lesson Plan

Objectives

The National Science Education Standards

K-4, Life Science: Characteristics of organisms, Life cycles of organisms, Organisms and environments

• Children will gain an appreciation for the mealworm as a living organism
• Children will learn about the mealworm’s characteristics at each stage
• Children will learn about the mealworms’ habitat, food
• Children will learn about the mealworm’s life cycle
• Children will apply their knowledge of mealworms to other beetles

Vocabulary

• Life cycle; Larva; Pupa; Beetle; Metamorphosis

Materials

• Mealworms – can get in any bait shop or pet store.
• Mealworms’ bedding – oats, bran, and the bedding that comes with the mealworms.
• Habitat – a small terrarium or a clear plastic bag, small clear plastic containers as additional habitats, for experimenting with different foods or environments.
• Mealworm books – for example “Mealworms: Raise them, watch them, see them change” by Adrienne Mason, illustrated by Angela Vaculik.
• Pictures of the mealworm’s life cycle and close up pictures of each stage.
• Mealworm life cycle coloring page (at the end of lesson plan)
• Story board images (made by the teacher. Template is found at the end of the lesson plan)

Planning

• Make cardboard (or other type) puppets for the story
• Read and learn about the mealworms.
• Prepare the environment – pictures and books of mealworms in the science area
• You may want to prepare a ‘mealworm journal’ to each child, where he or she can draw or glue their observations.

This lesson plan is based on the learning cycle format of: Awareness, exploration, inquiry, utilization.

Awareness (opening, introducing the topic to the children)

• Introduce the topic of mealworms by presenting the mealworm story (found at the end of the lesson plan) with the puppets.

• Present the mealworm to the children during large group, tell them that they will be the classroom guests for the next few weeks. Further exploration of the mealworms will be during small group activity
**Exploration**

For the exploration phase leave the mealworms in the science area, together with magnifying glasses and paper for recording. Have books about the mealworm and pictures of the life cycle so children can compare what they see with a larger image.

- During small group activity put some of the mealworms on a plate. Allow the children to touch but warn them that they need to be very gentle so they do not harm them. Ask the children to observe how the mealworms move, and try and imitate their movement.

- Provide the children with colors, and ask them to draw the mealworm, and try to match the colors on the colors of the mealworm.

- Measure the mealworms by putting them on a stick and marking the length of the mealworm on the stick. Repeat this activity every day, so the children will realize that they grow.

- Ask children to predict how many days until the mealworms will turn into a cocoon. Count the days of their presence in the classroom.

- When you feel that the children in your classroom have a good appreciation of the mealworms – it is time to move into the inquiry session, in order to investigate some properties that are not visible.

**Inquiry**

- Encourage children to ask questions about the mealworms, record their questions. Then, guide the children in choosing one or two questions to investigate.

- One investigation could be finding out what the mealworms’ favorite food is. Ask children to being different types of food from home (cereal, fruits, bread). Then, divide the mealworms and put few in each small container. Put two or three food types in each container, and assign two observers for each container. The observers will look daily and report their findings. For younger children, observation could be lead by the teachers during large group or small group time.

- In their report, the children can draw the favorite food or glue pictures on a paper.

- Another investigation could focus on the mealworms’ habitat. Go outside and collect different bedding materials like soil, leaves, sticks, grass. Arrange in different corners of the terrarium and observe where the mealworms prefer to stay. Ask the children to predict the mealworms favorite habitat. Invite children to report their observations and findings to the class.

- Life cycle investigations. Does temperature or light affect the pupas? After the mealworms turned into pupas, divide them into different containers. Let the children predict the days until they hatch. Ask the children if they think that light or temperature may play a role in the hatching process. Put one container in the dark and one in the light. Put one container under a lamp so it is warmer, and another by a window so it is cooler. Have the children tally the days
until the beetles hatch next to each container. When all the beetles hatch, collect the recordings from all stations and construct a data graph that summarize the children’s findings.

- As an ending for the project create a classroom mealworm book that contains the pictures, data and life cycle as observed by the children. Leave the book in the classroom library so children can revisit it throughout the year.

**Utilization** (application, transfer of information; Applying the new information to other subjects or in other situations)

- Ask the children to organize pictures of the mealworm egg, larva, pupa & beetle in order.

- Expand the concept of life cycle by discussing other insects’ life cycles (butterfly, lady bug). Leading the children to see that unlike other animals, most insects go through different stages in their life cycle, a process called **metamorphosis**.
The little mealworm

By Mia Dubosarsky

A tiny egg was lying in the darkness and warmth of the soil under a big rock. Suddenly, the egg moved and trembled, a tiny hole appeared, and a small larva made its way out of the egg. It was small and yellowish, it looked around but did not see anyone. "I am so hungry," thought the larva, and it started searching for food. It crawled until it got to a small pile of decayed wood and started munching. "I wish I had a friend to play with," thought the larva when it finished eating. It looked around but saw only rock and soil. Suddenly, it felt the soil moving and out came a long brown creature.

"Hello," said the larva, "would you like to be my friend?"

"It depends," answered the long creature, "are you a worm? I only play with worms."

"I don't know," said the larva, "I just hatched. What do worms look like?"

"Well," said the worm, "everyone knows that worms are long and skinny, and crawl in the ground."

"I am long," said the larva, "and I am skinny and crawl in the ground. I think I am a worm."

"That is wonderful," said the worm, "now we can play together!"

The worm and larva played together, ate together and slept together. The worm taught the larva it needs to hide from birds, turtles and frogs. It watched the little larva shed its skin and grow larger and larger. The worm was surprised because it never saw other worms molt before. After weeks of playing together, something strange happened: the worm looked at the larva as it shed its skin, but this time what came out was not a larger larva, it was white and did not move much (although it moved a little when the worm touched it). "Hey, worm friend," the worm said, but no answer came. "My friend is sick! I must do something," thought the worm, and started calling for help.

A beetle that stood nearby came and asked the worm what happened. "It's my friend, the larva," said the worm. "It's sick, it's all white and not moving." The beetle smiled and said, "your friend is not sick, it's going through a transformation." "What is transformation?" asked the worm. "I never saw other worms do that!" "It is because your friend is not a worm, is it a beetle just like me!" The worm opened her little mouth in amazement. "But... but... it looked just like me, it was thin and long and crawled in the soil!"

"You know" said the beetle, "beetles go through different stages in their lives, just like butterflies. When we hatch from the egg we look like little worms, long and skinny. This is our larva stage. After we eat a lot and grow we turn into a pupa, which does not move much, although many changes are happening inside it. After a week we turn into a beetle and then we can lay more eggs.

"How amazing," said the worm, "I am born a worm and just stay that way!"

"Your friend the larva will be out of the pupa in few days," said the beetle as it walked away.

The worm came back to check on her friend every day, until one day it happened: the pupa was broken and a beetle crawled out of it.

"Hello friend," said the worm, "how do you feel?"

"A little different," answered the new beetle, "and sad. Because now we cannot play together since I am not a worm anymore."
“That’s okay,” said the worm, “I do not care about your shape anymore. You still are my friend, you just look different.”

“I promise not to change anymore,” said the beetle, and since that day the worm and the beetle continue to be good friends.

Template for making story puppets:

- Worm
- Mealworm
- Pupa
- Beetle