Butterfly Bonanza: A STEM Adventure!

Introduction: Fluttering Wonders (10 mins)

What flies, starts as a crawler, and transforms completely? A butterfly! Today, we're going on a STEM adventure to explore the amazing world of butterflies. Did you know butterflies taste with their feet? Let's uncover more cool facts and learn about their incredible journey from egg to beautiful winged insect.

Activity 1: The Metamorphosis Mission (20 mins)

Butterflies go through a magical change called metamorphosis. Let's investigate the four stages:

- **Egg:** Tiny spheres or ovals, often laid on specific host plants. Why specific plants? (Food for the caterpillar!)
- **Larva (Caterpillar):** The eating machine! This stage is all about growth. They shed their skin several times. Research: What do caterpillars eat?
- **Pupa (Chrysalis):** The transformation station! The caterpillar forms a protective shell. Inside, it's rearranging itself. It looks still, but amazing changes are happening.
- **Adult (Butterfly):** The beautiful flyer emerges! Its main jobs are to reproduce and sip nectar. Research: How long do adult butterflies usually live?

Task: Draw the four stages of the butterfly life cycle in order. Label each stage.

Activity 2: Butterfly Feeder STEM Challenge (30-40 mins)

Butterflies need food (nectar) to survive. Let's design and build a simple feeder to help them out! This is an engineering challenge.

The Challenge: Design a device that can hold a sweet liquid (like sugar water or fruit) safely and allow a butterfly to land and feed.

Brainstorm & Design:

- What materials could we use from our list? (sponge, plate, string, etc.)
- How can we make it easy for a butterfly to land?
- How can we hang it or place it securely?
- How will we put the 'nectar' (sugar water or fruit) in it?

Task: Sketch your design first. Think about the parts and how they fit together.

Build & Test:

- Gather your chosen materials.
- Construct your butterfly feeder based on your design.
- Test it: Does it hold the liquid/fruit? Is it stable? Could a butterfly land on it?
- Modify: If it doesn't work perfectly, how can you improve your design? (This is part of engineering!)

Prepare 'Nectar': Mix 1 part sugar with 4 parts warm water until dissolved. Let it cool completely. Alternatively, use very ripe fruit like bananas or oranges. Soak the sponge (if using) or place fruit pieces on the plate.

Placement: Hang or place your feeder in a sunny spot, preferably near flowers if you have them.

Activity 3: Butterfly Observation (Ongoing/Optional)

If you can, observe your feeder. Do any butterflies visit? What do they look like? How do they feed? If you can't observe live butterflies, watch some online videos of butterflies feeding.

Task: Keep a small observation log. Note the date, time, and any visitors (butterflies, bees, etc.) or describe butterfly behavior from videos.

Wrap-up & Review (10 mins)

- Let's review the four stages of the butterfly life cycle. Can you name them in order?
- What is metamorphosis?
- What were some challenges in building the butterfly feeder? How did you solve them?
- Why is it important to provide food sources like nectar for butterflies?