Living Life Cycles

Summary

Students will use body movements and facial expressions to act out the life cycle of a butterfly.

Main Core Tie

Science - 2nd Grade

Standard 4 Objective 1

Materials

- Pattern for flower cutouts
- *The Life Cycle of a Butterfly*
  , by Bobbie Kalman
- *Butterflies and Moths*
  , by Kris Hirschmann
  Music of Vivaldi's Spring or Chopin's March No. 1 in Eb (Major Op. 18)
  Chrysalis covers -- (dancing scarves, towels, plastic table cloths, fabric etc.)
  Party blow-outs
  Milk Duds

Additional Resources

Books

- *Movement-based Learning*
  , by Rhonda L. Clements & Sharon L. Schneider; ISBN 0-88314-916-8
- *The Life Cycle of a Butterfly*
  , by Bobbie Kalman; ISBN
- *Butterflies and Moths*
  , by Kris Hirschmann; ISBN 0-439-67651-7
- *Caterpillarology*
  , by Michael Elsohn Ross; ISBN 1-57505-055-2
- *Discovering Butterflies*
  , by Douglas Florian; ISBN 0-684-18439-7
- *Insect Metamorphosis*
  , by Ron and Nancy Goor; ISBN 0-689-31445-0
- *Creepy, Crawly Caterpillars*
  , by Margery Facklam; ISBN 0-316-27391-0
- *Where Butterflies Grow*
  , by Joanne Ryder; ISBN 0-525-67284-2
- *Amazing Butterflies and Moths*
  , by John Still; ISBN 0-679-81515-5
- *Waiting for Wings*
  , by Lois Ehlert; ISBN 0-15-202608-8

Background for Teachers

Students need to understand the *metamorphosis* or life cycle of a butterfly. During the first stage, the female lays tiny *eggs* on a leaf (host plant), then around five days later, the egg hatches into a tiny larva. This larva is called a *caterpillar*. During this second stage, its primary purpose is to grow and eat leaves. Its first meal is eating its own egg shell. The caterpillar eventually attaches itself to a twig

and forms a hard outer shell called a *pupa* or *chrysalis*. This third stage is the resting or transformation stage for the pupa, where a marvelous transformation from caterpillar to adult takes place. During this fourth and final state, the pupa skin splits, the limp, damp butterfly or moth crawls out with compound eyes, a proboscis for feeding, and six legs. The wings expand, and blood begins pumping into them. A little warming from the sun, and it is now ready to fly off to feed and lay its eggs. If you're focusing on the monarch butterflies, students should understand a little about the milkweed plant. Monarchs need milkweed to survive. The butterfly lays its eggs on milkweed plants. The growing larvae (caterpillars) eat milkweed leaves. These leaves contain toxins--poisonous chemicals. These toxins do not hurt the caterpillar, but they do make the caterpillar poisonous to most predators. Because it eats milkweed leaves as a caterpillar, the monarch butterfly is also poisonous. The vibrant colors of the monarch, make it difficult for the butterfly to camouflage itself so the survival of the monarch butterfly depends on this self defense system provided by the milkweed.

Intended Learning Outcomes

4. Develop physical skills and personal hygiene.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures

Invitation to Learn
Tell the students:
I'm going to give you some direction to follow. Pay attention to see if you need to move fast or slow, work way up high or down low, and notice if you use a lot of space or just a small spot. Sometimes I'll want to see big movement and sometimes I'll hardly notice you're moving at all. For this first group of instructions, stay in one place and remember you can only use body movement and facial expressions, but no talking or sounds.
Arch like a cat, stretch like a rubber band, pull like you're in a tug-of-war, topple like a house of cards, flutter like a fly caught in a spider's web, tip-toe while the baby is sleeping, duck out of the way of that low tree branch, freeze you body into a statue, sink to the bottom of the ocean, shake like a wet dog, expand like a balloon being blown up, burst that balloon open, melt to the ground, rise to the sky, sway back and forth in the wind, dangle on the edge of a cliff, turn slowly on one foot, spin quickly on the other, now stop.
You are amazing! Now try these movements. This time you can use the space in the classroom/gym. Remember I'm only watching for body movement and facial expression. No talking or sounds.
Walk at a nice slow pace, scamper like a squirrel gathering nuts, search on the ground for your missing coin, gallop like a horse in the meadow, climb to the top of the tree, slither like snake, skate like you're on ice, soar like a bird, hop like you're playing hopscotch, march like you're in a parade, run like you're being chased, trudge through the knee-high mud, sneak like you're snatching an extra cookie, waddle like a duck, charge like a bull, leap like a frog, wander like you're lost, roll down the hill, jump like a kangaroo, crawl like a baby, now stop.
Instructional Procedures

Tell the students we need to create a colorful flower garden in our classroom or gym for some special visitors who will be visiting today. Pass out a variety of colored paper with patterns of a flower. Have each student write one thing they know about the life cycle of a butterfly. Have them cut out their flower, and share their written idea with a classmate. When they are finished sharing, students will tape or pin their flower to the wall. (This area of the room will become the flower garden the butterflies will visit as they drink using their proboscis.)
Read the book, *The Life Cycle of a Butterfly*, or chapter two of *Butterflies and Moths*.
Discuss and review the life cycle process with your students.
Tell the students that they are going to have a chance to act out the life cycle of a butterfly.

Remember that caterpillars and butterflies don't talk. Everything you show me needs to be done with body movements and facial expressions

Lay out a chrysalis cover along with a party blow-out (to be used as the butterfly's proboscis) for each student (or whatever props you've chosen to use).

Turn on some music such as Vivaldi's Spring or Chopin's March No. 1 in E flat (Major Op. 18).

Then narrate the life cycle as follows:

Narration:

Find a quiet part of the room to curl up on the ground as a tiny egg on a leaf that was just laid by a female butterfly. How small can you get? How quiet can you be?

Your egg begins to move. Something exciting is happening. You begin to hatch from your egg--coming out as a very small caterpillar. You move in slow motion and the first thing you do is to begin eating. Start by eating your old egg covering. You love to chew leaves and you eat all the time. Some of you are monarch caterpillars who started life on the milkweed plant and you're eating the milkweed leaves. I'll pass out a Milk Dud for you to eat so you can keep growing. This milk weed will make you poisonous to your predators. Oh look! You've eaten so much and have grown so big you begin to shed your outer skin because your old one doesn't fit anymore. This is called molting. You will probably molt four or five times before you become full grown. Keep eating, keep growing. That is your most important job as a caterpillar. Can you crawl to find a new leaf to eat? You are growing so big you are nearly full grown--getting ready to make a big change. Can you molt one more time out of your skin?

Now that you're a full-grown caterpillar, find an imaginary stick, a leaf, or another object to hold on to where it will be safe. Use a silk thread that you squirt from your mouth to attach yourself to your new home. Now that you're firmly hanging on, your outer skin pops open and begins to shed. Wrap yourself up in your chrysalis cover. This new skin looks very different from your old skin. It is soft at first but then it quickly hardens. Soon your new skin is so hard that it cannot move. You become very stiff and still. It is now called a pupa or a chrysalis. As you hang there you look like a twig, a bud, or a dead leaf. This disguise hides you from anything that might want to come and eat you.

Inside your pupa you are making some amazing changes. You are turning into a butterfly. Stay inside your chrysalis but remember your wings with colorful scales begin to grow. You develop an adult body, legs and eyes, and another feature called your proboscis. This becomes the drinking tube you will eat with when you emerge from your chrysalis. Finally the change is complete. You are almost ready to come out as a beautiful butterfly.

Get ready! Your outside pupa shell begins to split and you crawl out. Your body is soft and shapeless and your wings are crumpled. You're starting out very small, so hold on tight with your legs and start pumping blood into your wings. Your wings grow quickly, like balloons filling with air. You soon reach full size. After all that work you need to rest for awhile until your body completely hardens and dries with a little help from the sun. Now you're ready! Flutter your wings then fly away. Off to be a butterfly.

If you get hungry during your flight, you may need to fly to our flower garden and use your proboscis, or drinking tube to sip some nectar. Remember now that you're a butterfly you can't chew or bite anymore. If you get tired, stop and rest awhile. But remember to keep your wings closed, that way you'll stay better camouflaged from your enemies.

You fly so gracefully. That tall grass seems as thick as a forest and flowers are as tall as trees. You love to fly through the meadow or flutter through a damp rainforest flashing your bright, colorful wings. Unroll your tongue, sip a drink of nectar. Soon you'll be flying back home. You have eggs to lay.

Extensions

Curriculum Extensions/Adaptations/ Integration

Give students another animal or thing that has a life cycle (rocks, water, frogs, mosquitoes,

spiders, bees, trees, sunflowers, etc.) and have them write a narrative the class could act out.
Use a butterfly mask for students who may be physically unable to participate in whole movement activities.
Use as a math extension for measurement. How fast does a caterpillar go? Lay out two parallel measuring sticks, then using five or six different caterpillars, have the students measure how far a caterpillar moves in 45 seconds. Make a chart or a graph.

Family Connections

Go on a walk with your family during the spring and look for a caterpillar to adopt. Have your family help you make a good home for your caterpillar in a jar with plenty of leaves to eat, lots of air holes, and a secure spot for you caterpillar to attach itself during the metamorphosis process.
Act out the life cycle of a butterfly for members of your family. Can they guess what you are?
Keep a daily log or journal of your caterpillar's amazing transformation.
Share one of our butterfly poems with someone in your family.
Share your performance with a teacher, another class, or parents!

Assessment Plan

The children participating in this activity will use movement to portray each stage of the butterfly's life cycle. By performing each part, the teacher will easily be able to observe each student's gross motor activity as well as observe their understanding of the life cycle of the butterfly.
Students could be given the opportunity to narrate in their own words the four life cycle stages as their classmates act it out.
Students could act out various life cycles and let their classmates guess what they were portraying.
Following this activity the students will then have to draw their own picture and label each stage of the life cycle of the butterfly.
As a pre-assessment you may want to display out of sequence pictures of the four stages of the life cycle of a butterfly and see if students can sequence them appropriately.

Bibliography

Dwyer, T., Salles, J.F., Blizzard, L., Lazarus, R., Dean, K. (2001). Relation of academic performance of physical activity and fitness in children. *Pediatric Exercise Science*, Volume 13.3, p.225
This article studied the relationship of academic performance to physical activity and fitness in children and concluded that physical activity does enhance academic performance.
The results also showed that physical activity increased the secretion of tryptophan across the blood-brain barrier, having a calming effect in children enabling them to sit and concentrate on academic pursuits. Physical activity also increased the blood flow to the cortex of the brain. There is also a positive relationship between physical activity and self-esteem in children.
Lister, D.O. (2005). Effects of traditional versus tactual and kinesthetic learning-style responsive instructional strategies on Bermudian learning-support sixth grade students' social studies achievement and attitude test scores. *Research for Educational Reform*, Volume 10.2 pp. 24-40, 17p; (AN17490687)
This article investigated learning style characteristics and the effects of traditional instruction versus learning-style responsive instruction on student's achievement and attitude-test scores. Students performed significantly higher when emphasis on manipulation of resources and active engagement was emphasized rather than to focus on traditional instruction using lectures, discussions, and worksheets.

Authors

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