Title/Description of Lesson

Lines of Symmetry – Learning the parts of a butterfly and making a connection between symmetry in nature, math and art, students will make a symmetrical butterfly from cut and punched construction paper.

Grade Level: 1st – 3rd

Lesson Links

Objectives/Outcomes
Materials and Resources
Vocabulary
Procedures
Criteria for Assessing Student Learning
California Standards in Visual & Performing Arts
California Standards for Integrated Subject
Other Resources

Objectives/Outcomes

Students will know the main parts of a butterfly’s body and wings
Students will understand the meaning of symmetry in nature, architecture and art
Students will make a connection between symmetry in nature, architecture and art.
Students will know that complementary colors are opposite on the color wheel
Students will know that the paper colors used in the art project are complementary

Materials and Resources

Supplies needed:

- Construction paper …2 - 9”x12” sheets of complementary colors (purple and yellow, red and green, or orange and blue)
- Pencil
- Scissors
• Hole punch
• Glue stick
• Markers or crayons
• Optional: Glitter glue or glitter

**Vocabulary**  
(Return to Links)

- **Insect** - any of numerous small animals without vertebrae (as spiders, butterflies or centipedes) whose bodies are more or less segmented or made of multiple parts.
- **Symmetry** - correspondence in size, shape, and relative position of the parts on opposite sides of a dividing line or about a center or axis
- **Line of Symmetry** - the imaginary line where you could fold an image or object and have both halves match exactly.
- **Complementary Colors** - Two colors on opposite sides of the color wheel, which when placed next to each other make both appear brighter. (They are yellow and purple, red and green, blue and orange.)

**Procedures**  
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Present the anatomy of the butterfly using the information available under ‘Other Resources’ below. For more science related information, see the link to ‘Enchanted Learning’ under ‘Other Resources.’

In order to make the connection between science, math and art, show students the web videos at ‘Links Learning’. Find a link to these under ‘Other Resources’.

**Art Project…**

**SYMETRICAL – BUTTERFLY**
A colorful butterfly can be made from construction paper.

Fold two pieces of construction paper in half.
Put the two folded pieces together (one inside the other).
Along the fold of one of them, draw half a butterfly shape.

Keeping the two pieces together, cut along the line you just drew. You will now have two butterflies.

On only one of the butterflies, fold it in half again and draw another smaller butterfly within it.
Cut along the line you just drew.

Without unfolding your shapes, use a hole punch to make a series of holes along the edges of the two pieces you just cut.

Glue one of these pieces onto the larger, uncut butterfly.
Flip the large butterfly over, and glue on the other cut piece.

Cut a black or brown body for your butterfly. Glue it onto the inside of your butterfly.
You now have a symmetrical butterfly.

Optional: Decorate your butterfly with crayons, markers, glitter glue, or glitter.

**Criteria for Assessing Student Learning**

Students can identify a line of symmetry
Students know the 3 parts of a butterflies’ body
Students know the 2 parts of a butterflies’ wings
Students know what a complementary color is.
Students have made a symmetrical paper butterfly with wings and body.

**California Standards in Visual & Performing Arts**

**Visual Arts**

**Grade 1st – 3rd**

Visual and Performing Arts: Visual Arts Content Standards.

1.0 ARTISTIC PERCEPTION
Processing, Analyzing, and Responding to Sensory Information Through the Language and Skills Unique to the Visual Arts

Students perceive and respond to works of art, objects in nature, events, and the environment. They also use the vocabulary of the visual arts to express their observations.

Develop Perceptual Skills and Visual Arts Vocabulary
1.1 Describe and replicate repeated patterns in nature, in the environment, and in works of art.

Analyze Art Elements and Principles of Design
1.3 Identify the elements of art in objects in nature, in the environment, and in works of art, emphasizing line, color, shape/form, and texture.

**Grade Two**

Visual and Performing Arts: Visual Arts Content Standards.
2.0 CREATIVE EXPRESSION
Creating, Performing, and Participating in the Visual Arts

Students apply artistic processes and skills, using a variety of media to communicate meaning and intent in original works of art.

Communication and Expression through Original Works of Art
2.4 Create a painting or drawing, using warm or cool colors expressively.
2.5 Use bilateral or radial symmetry to create visual balance.

Grade Three
Visual and Performing Arts: Visual Arts Content Standards.

1.0 ARTISTIC PERCEPTION
Analyze Art Elements and Principles of Design
1.5 Identify and describe elements of art in works of art, emphasizing line, color, shape/form, texture, space, and value.

California Standards for Integrated Subject  (Return to Links)

Math

Grades 1\textsuperscript{st}-3\textsuperscript{rd}

2.0 Students identify common geometric figures, classify them by common attributes, and describe their relative position or their location in space:

Science

Life Science

1\textsuperscript{st} Grade
2. Plants and animals meet their needs in different ways. As a basis for understanding this concept:
   a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

2\textsuperscript{nd} Grade
2. Plants and animals have predictable life cycles. As a basis for understanding this concept:
   a. Students know that organisms reproduce offspring of their own kind and that the offspring resemble their parents and one another.
b. Students know the sequential stages of life cycles are different for different animals, such as butterflies, frogs, and mice.
c. Students know many characteristics of an organism are inherited from the parents. Some characteristics are caused or influenced by the environment.

3rd Grade
3. Adaptations in physical structure or behavior may improve an organism’s chance for survival. As a basis for understanding this concept:
   a. Students know plants and animals have structures that serve different functions in growth, survival, and reproduction.

Other Resources  (Return to Links)

Anatomy of a butterfly

A butterfly is an insect. It has three main body parts and 2 main wing parts.

The body parts are the head, the thorax, and the abdomen. The wing parts are the forewing and the hindwing.

The head contains the butterfly’s compound eyes, its antennae and its proboscis. The antennae help the butterfly smell and feel. The proboscis is its tongue. It
is a long tube that works like a straw and lets the butterfly suck up nectar. When the proboscis is not being used it stays coiled up like a garden hose.

The thorax is the chest part of the butterfly. There are four wings attached to the thorax. The two wings closest to the butterfly’s head are the forewings and those at the tail end are the hindwings. There are also six legs attached to the thorax. The muscles in the thorax make the legs and wings move. Butterflies also have six legs. Some types of butterflies have two very short front legs. At the end of each foot, there is a claw that helps the butterfly hold on to things.

The biggest part of a butterfly is the abdomen, which is at the tail end.

Web Video link that explains symmetry

Links Learning videos on symmetry

http://www.linkslearning.org/Kids/1_Math/2_Illustrated_Lessons/4_Line_Symmetry/index.html
Enchanted Learning- information about butterflies

http://www.enchantedlearning.com/subjects/butterfly/
Enchanted Learning Web site….links to much science information related to the butterfly.

Pictures to support connection between art, architecture and nature

Math

(Return to Links)
Nature

(Return to Links)
Art Connections