Principles of Flight

Lesson Plan: If Peter Pan Can Fly, Why Can't I?

Grade Level: 2-6

Subject Area: Science

Time Required: ***Preparation:*** 1 hour
Activity: 1 hour every day for three days

National Standards Correlation:

Science (grades K-4)

- History and Nature of Science Standard: Science as a human endeavor.
- Unifying Concepts and Processes Standard: Systems, order, and organization.
- Unifying Concepts and Processes Standard: Evidence, model, and explanation.
- Life Science Standard: Characteristics of an organism.
- Life Science Standard: Organisms and environments.
- History and Nature of Science Standard: Science as a human endeavor.
- Science as Inquiry Standard: Abilities necessary to do scientific inquiry.

Science (grades 5-8)

- Unifying Concepts and Processes Standard: Evidence, models and explanation.
- Science as Inquiry Standard: Abilities necessary to do scientific inquiry.

Summary: In cooperative learning groups students will investigate and classify a group of animals first generally and then specifically into fliers, gliders, and ground animals. Students will list characteristics that each of these groups have in common. After researching the characteristics of flying animals each group will redesign a human being so he/she can fly.

Objectives: Students will:

- Classify animals into groups of fliers, gliders, and ground animals.
- Develop a list of characteristics each group has in common.
- Research the adaptations animals have made in order to be able to fly.
- Redesign a human, using the data gained in research, so that he/she can fly.

Background: See the selections by Darling, Lopez, Taylor and West listed in Resources/References.

Materials: You will need:

- Pictures and plastic models of animals that include, but should not be limited to: swans, geese, robins, eagles, ducks, bats, flying lizards, flying fish, sea gulls, dragon flies, bees, pterodactyls, mosquitoes, butterflies, dogs, cats, lions, giraffes, elephants, horses, bears, snakes, sharks, turtles, frogs, owls, star fish, sponges, worms, etc.
- Worksheet numbers 1, 2 and 3
- Pencils
- Crayons and markers
- Scissors
- Construction and tissue paper
- Pipe cleaners
- Clay
- Toothpicks and Styrofoam

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- Ribbons, buttons and scraps of material
- Tape or glue

Procedure:

A. Warm-up

1. Students should work in groups of three or four.

2. Give each group a collection of plastic animals and pictures. Instruct students to group the animals according to any criteria they select, and complete the animals worksheet as a team.

3. After the groups have completed their classifications and worksheet, select one student from each group to explain what criteria were selected and how the animals were classified.

4. Allow other groups an opportunity to ask questions or challenge any of the classifications.

5. Then ask students to reclassify their animals into three groups 1) fliers, 2) gliders and 3) ground animals using the chart.

6. After the groups have completed their classifications, have a different person present the group's findings to the class.

7. Again, give other groups the opportunity to question or challenge.

B. Activity

1. On Day 2, have students conduct research on animals that can fly and animals that can glide and why. A variety of resources, such as videos and web sites, as well as books and reference materials should be used.

2. On Day 3, have students use the information they collected to redesign a human so that he/she can fly. There must be a written description and justification for each change and adaptation made. Students also need to include a model of their flying human. This may be a poster, sculpture, diorama, mobile or any design of their choice.

3. Have students present their "Flying Human" to the class.

4. Students should then complete the evaluation form and have a conference with their instructor.

C. Wrap-up

1. Students may wish to do one of the following:
   - Present their "Flying Human" at a parent open house.
   - Present their "Flying Human" to another class or a special teacher.
   - Make a video tape of their "Flying Humans."
   - Invite some pilots to critique their "Flying Humans."

Assessment/ Evaluation:

Use Team Evaluation

Extensions:

1. Design a game that would teach the principles of flight you learned in this unit.

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2. Write a children's book about animals that fly.

3. Investigate myths on "How Birds Learned to Fly." Then write a myth of your own.

Resources/ Reference:

Darling, David J. *Up, Up and Away: The Science of Flight.* New York: Dillon Press, 1991.

Lopez, Donald. *The Nature Company Discoveries Library: Flight.* Time-Life Books, 1995.

Taylor, Barbara. *Up, Up and Away! The Science of Flight.* New York: Random House, 1992.

West, Ruth. *Why Does It Fly?* Mystic Island, New Jersey, 1994.

Vertebrate Adaptations. Scientific America, W. H. Freeman & Co. 1952.

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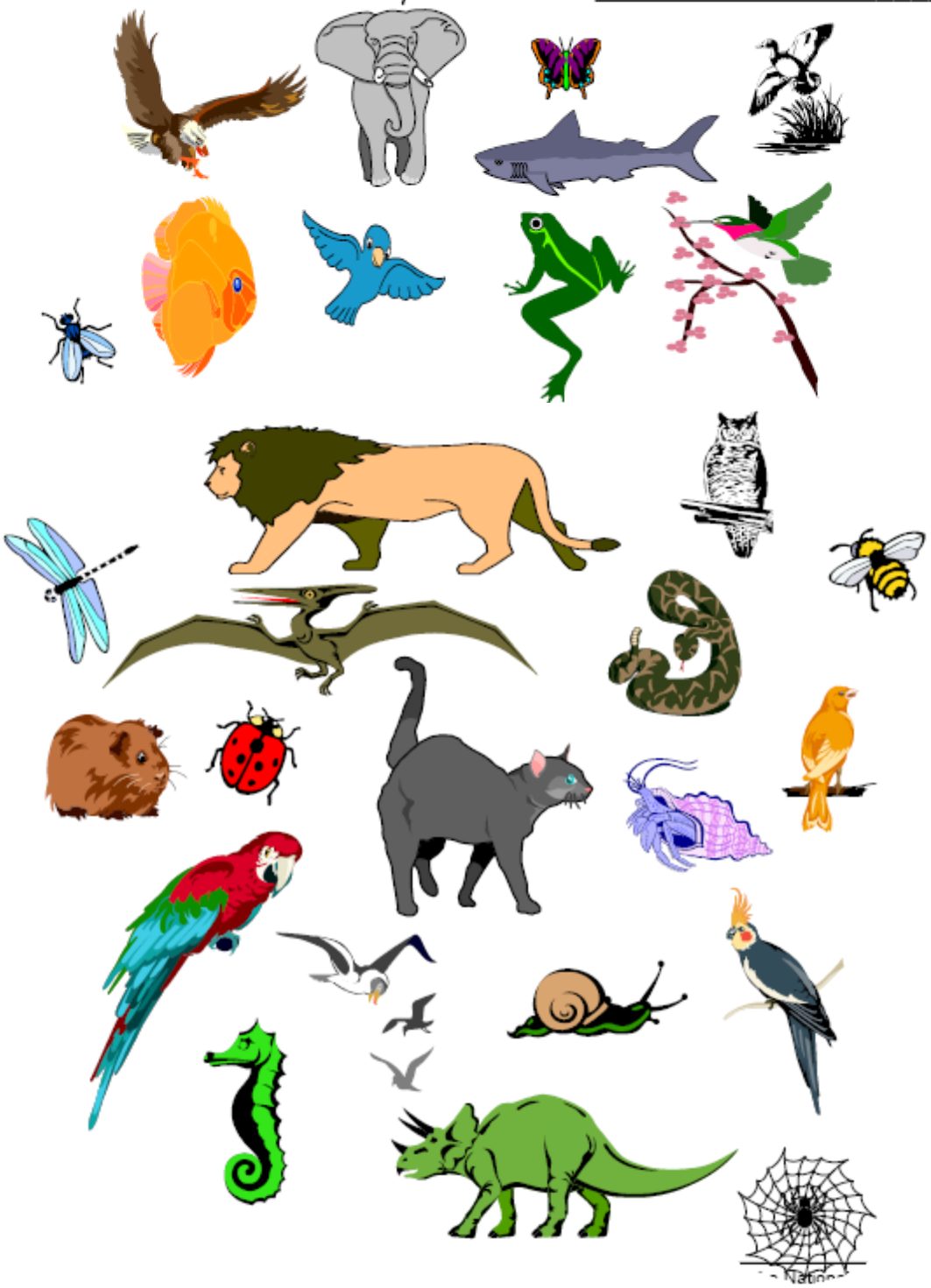
Circle the animals that can fly. Name _____



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IF PETER PAN CAN FLY, WHY CAN'T I?

NAME_____

GROUP NAME_____

LIST THE ANIMALS BY TYPE:

FLIERS	GLIDERS	GROUND ANIMALS

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Team Evaluation

1. What references did your team use?

2. What did you learn about adaptations animals make to fly?

3. What contributions did you make to your group?

4. How did your group work together? If there were problems, what were they?

5. What did you like about working with your group?

6. What did you dislike about working with your group?

7. What do you think you did well in your project?

8. What difficulties did you have in your project?

9. How do you think your project might be improved?

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