**Action Plan for Learning**

**Teacher’s Summer Institute 2011**

**Title:** Animal Adaptations  
**Subject Area/Grade:** Science, Art/Fourth Grade  
**Investigative Question:** How does coloration, camouflage and mimicry affect the survival of living things?

**PA Teaching Standards:**  
**Science**

- **3.1.4.C2:** Describe plant and animal adaptations that are important to survival.

- **S4B.2.1:** Identify and explain how adaptations help organisms survive.

- **S4B.2.1.2:** Explain how specific adaptations can help a living organism survive (e.g. protective coloration, mimicry, leaf sizes and shapes, ability to catch or retain water)

**Art**

- **9.1.5A:** Know and use the elements and principles of each art form to create works in the arts and humanities.

- **9.1.5B:** Recognize, know, use and demonstrate a variety of appropriate art elements and principles to produce, review and revise original works in the arts.

**Learning Objectives:** Upon completing this lesson the students will be able to:

- Identify adaptations that help animals survive in various environments.
- Identify animals using coloration (camouflage) for adaptation.
- Identify animals using mimicry for adaptation.
- Create an insect that is adapted to its environment (classroom) through coloration or mimicry.
**Duration:** 2-45 minute class periods

**Material & Citation of Resources:**


[http://www.museum.state.il.us/flashapps/clink/protectiveColoration.swf](http://www.museum.state.il.us/flashapps/clink/protectiveColoration.swf)

[www.alleghany.k12.va.us/animal%20adaptation%20webpage/animal_mimicry.htm](http://www.alleghany.k12.va.us/animal%20adaptation%20webpage/animal_mimicry.htm)

[http://www.loc.gov/pictures/item/2006677388/](http://www.loc.gov/pictures/item/2006677388/)


- Flash cards
- Art Paper
- Scissors
- Markers

- Crayons
- Glue
- Computers
- Projector/Screen
Inquiry-Based learning: I will use an Inquiry-Based Learning Model with the following components:

- **Ask**: The teacher will have students view a website to find the Where’s Waldo? character and will ask them to locate Waldo. The students will ask to give the meanings to the words: coloration, camouflage and mimicry. The students will then be presented with the investigative question “How does coloration, camouflage and mimicry affect living things.

- **Investigate**: The students will investigate various websites to learn how animals and insects use coloration and mimicry to survive.

- **Create**: The students will create a 3-D paper insect that is adapted to its environment by color or mimicry or both and hide it in its environment.(classroom)

- **Discuss**: The teacher will lead the students in a discussion concerning the survival of their insect.

- **Reflect**: The students will think back to the design of their insect. They will discuss the possibility of reconstructing their insect and what they might do differently to ensure its survival.
Description of procedure:

Explain to students that in this lesson they will be engaged in several activities and be evaluated on creating an insect with adaptations by color, camouflage and/or mimicry. To begin the lesson I will use the web site:

http://chalk.richmond.edu/education/projects/webunits/adaptations/camou1.html

Waldo is a cartoon character that is famous for being hidden in crowds. He tends to blend in with his surroundings. The students will attempt to locate the character. I will ask the students to find Waldo in both pictures. We will discuss whether it was easy or hard to find Waldo and why. I will then show flashcards with the words: coloration, camouflage and mimicry. The students will be asked if any of them know the meaning to the words. If they do not know the meanings I will provide one for them along with examples. We will discuss how these things serve as adaptations to animals. We will also discuss how these can help an animal to survive.

I will then ask the students if they know of how the use of coloration, camouflage or mimicry is used. I will guide their discussion to include the military. We will discuss the purpose for this. (protection from the enemy, being disguised to get closer To enemy lines, etc.) I will then show the two pictures from the Library of Congress.

http://www.loc.gov/pictures/item/owi2001045278/PP/

http://www.loc.gov/pictures/item/owi2001045278/PP/

One picture is of German soldiers under a camouflaged screen. We will discuss the purpose of the camouflaged screen. Camouflaging their position will help them get
closer to the enemy.

The second picture is that of a United States soldier in a camouflage uniform. The uniform helps the soldier blend in with his surroundings. The netting on his helmet helps to disguise it. We will discuss how the soldiers are adapted to their environment and how this can help them to survive. The students and I will discuss how nature has many lessons to teach us.

We will then investigate the use of coloration by visiting the following website.

[Link: http://www.museum.state.il.us/flashapps/clink/protectiveColoration.swf]

When the students have finished the activity on this website we will then discuss what they have learned about coloration. If the students are still having problems understanding the concept there are additional links which may be visited.

Next we will discuss mimicry and investigate the website:

[Link: www.alleghany.k12.va.us/animal%20adaptation%20webpage/animal_mimicry.htm]

Again we will discuss what the students have learned about mimicry and how it can help animals and insects adapt. Again, if the students are having problems understanding the concept there are additional links which may be visited.

I will then tell the students that they will be creating a 3-dimensional paper insect. They will be given a copy of the project rubric from which they will be assessed.

I will review the rubric so that the students will understand all of the concepts. They are to design the insect so that it will show adaptation to its environment and survive the daylight hours when the birds will be feeding. The environment will be the classroom and the birds will be students from another class.
First, I will tell the students to pick a section of the room where their insects will “hide”. Next, I will tell the students to look at the patterns and color in their area. I will then instruct the students to use similar colors and patterns to design their insects. The students will use ideas from the website and our discussions to make a blueprint of their insect on a sheet of paper. The students will then use art paper, crayons, markers, glue and scissors to create their insect.

After a given period of time we will “test” their insects. The students will then place their insects in their environment. We will then invite a group of students (birds) into our room to hunt for insects.

After the birds (students) have finished hunting, either by finding (eating) the insects or giving up (going hungry). The students will gather and discuss which insects were best adapted to their environments and those which weren’t. Of course those that were well-adjusted will have survived and those not as well adapted were “eaten”.

The students will then reflect on what they could change about their insects to make them more adaptable to their environment. They can pair with other students to consider other students’ ideas. If time allows students will be encouraged to alter their insects and be “tested” again with a different group of birds. An extension to this activity would be changing the “environment” of the insect. The students could adapt their insects to the outdoors or to a different room in the school.
Assessment:

After the final activity is completed the 3-dimensional insect will be assessed according to the objectives that the student should have mastered.

Student Assessment Based on the Project of Constructing the 3-Dimensional Insect

Building A Structure: Insect Adaptations

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color/Mimicry Ideas</td>
<td>Accurate information taken from several sources</td>
<td>Accurate information taken from a couple of sources</td>
<td>Accurate information taken from a couple of sources but not systematically.</td>
<td>Information taken from only one source and/or information not accurate.</td>
</tr>
<tr>
<td>Insect blueprint</td>
<td>Plan is neat with clear measurements and labeling for all components.</td>
<td>Plan is neat with clear measurements and labeling for most components.</td>
<td>Plan provides clear measurements and labeling for most components.</td>
<td>Plan does not show measurements clearly or is otherwise inadequately labeled.</td>
</tr>
<tr>
<td>Building the Insect</td>
<td>Appropriate materials were selected and creatively modified in ways that made them even better.</td>
<td>Appropriate materials were selected and there was an attempt at creative modification to make them even better.</td>
<td>Appropriate materials were selected.</td>
<td>Inappropriate materials were selected and contributed to a product that performed poorly.</td>
</tr>
<tr>
<td>Finished Product</td>
<td>Great care taken in construction process so that the structure is neat, attractive and follows plans accurately.</td>
<td>Construction was careful and accurate for the most part, but 1-2 details could have been refined for a more attractive product.</td>
<td>Construction accurately followed the plans, but 3-4 details could have been refined for a more attractive product.</td>
<td>Construction appears careless or haphazard. Many details need refinement for a strong or attractive product.</td>
</tr>
<tr>
<td>Test Run</td>
<td>Clear evidence of troubleshooting, testing, refinements based on data or scientific principles.</td>
<td>Clear evidence of troubleshooting, testing refinements.</td>
<td>Some evidence of troubleshooting, testing refinements.</td>
<td>Little evidence of troubleshooting, testing refinement.</td>
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</tbody>
</table>