

## Reflection for INTASC Standards #4 & #5

### Science Lesson (3<sup>rd</sup> & 4<sup>th</sup> Multiage Classroom)

This lesson is a lesson that I had taught in a 3<sup>rd</sup> and 4<sup>th</sup> grade multiage class. I have included it as evidence of my courage to demonstrate INTASC standards #4 and #5. For this lesson I was responsible for locating a classroom in which to teach an inquiry based science lesson as a part of my ED 351 Elementary Science class during the fall of 2008. Due to the fact that this was a classroom in which I had not taught before I had to rely on effective methods of instruction for a variety of learners through the use of questioning (Standard #4, *Diagnosis*.) The classroom teacher had informed me that the students would need to learn about animal classification. I adapted a lesson that I located via the internet that I felt was well suited to an inquiry-based approach in which the students themselves would ask questions and seek out answers through research (*Conceptualization*.) The students were given cards with a picture and label of various types of both invertebrate and vertebrate animals. Each group also received a Fact Sheet which contained information about the vertebrate animals they would sub classify into birds, reptiles, amphibians, fish and mammals (*Coordination*.)

I encouraged the students to work in small groups to determine how they would classify animals based on criteria they had initially developed. As a whole group, we then evaluated the various means of classification to determine what approach was most effective. I also reiterated several times throughout the lesson that scientist seek out the experience and knowledge from other scientists to help them develop their understanding of scientific ideas and concepts. This approach established the classroom quite quickly as a community of learners who then became actively engaged in establishing classifications of their animal cards (Standard #5, and *Communication*.) As the lesson progressed I had to constantly determine how the students were progressing both individually and as a group and their level of understanding regarding the context (*Integrative Interaction*.) As this was a group I was not as familiar with I had to make determinations based on observations of both behavior and performances.

Carrie Reno

ED 351 Science Lesson Plan Taught 10/14/08

### **Title of Lesson: How Are Animals Classified?**

Adaption of  
Macmillian/McGraw-Hill. (2002). Lesson : Kinds of animals. In *Mcgraw Hill Science*. (pp.A68  
–A 75). New York, New York: Macmillian/ McGraw-Hill Companies Inc.

### **Additional Source:**

National Research Council (NRC). 1996. National science education standards. Washington,  
DC: National Academy Press.

### **Goal(s)**

Life Science Content Standard C: As a result of activities in grades K-4, all students should develop understandings of

- The characteristics of organisms

Process skills: Communication, classify, compare, order

### **Pre-assess:**

The students have been learning about animals, habitat, and adaption. They are now going to be learning a bit about classification of animals and what methods would be most scientific.

### **Objective**

The student will group animals according to invertebrates and vertebrates. They will further categorize vertebrates into birds, fish, amphibians/reptiles, and mammals.

### **Assessment**

The teacher will walk around the room ask questions about why the students grouped the animals in the way that they did. The teacher can also look at the grouping that the students have made with the animal cards and determine if they understand the reasons behind the grouping methods.

### ***Materials Needed***

McGraw Science (2002) Text book  
Printouts of animal pictures from webpage below  
Ourlosbanos.com. (2008). Retrieved October 13, 2008 from  
[http://www.ourlosbanos.com/homeschool/printables\\_science.html](http://www.ourlosbanos.com/homeschool/printables_science.html) main site

***Time Needed:*** Approximately 45 min.

### ***Procedures***

#### **\*Introduction** (10 min)

I will divide the class into small groups and give each group a set of animal cards, an information packet, and a worksheet. I will tell the students that scientists like to organize animals into groups so that they can easily see how those animals are alike and in what ways they are different from other animals not in the group.

I will ask the students in what way would they group the animals. I will write their responses on the board. The students could also group the animal card that they have been given in the way that their group thinks is best. I would then have them answer the worksheet questions before we go over the grouping ideas as a group.

I would then go to each group and ask how they had organized their animals. As I do this I will let the students know that scientist often report their findings to other scientist who help them analyze and improve their methods.

#### **\*Developing the Lesson** (25 min)

Once we have gone through the different grouping ideas and the advantages/disadvantages of each I will tell them that there is a way scientist group animals that has proven to be very effective. First they group animals by vertebrates and invertebrates. I will ask the class if anyone knows what a vertebrate is. How about an invertebrate? Vertebrate are animals with spines, backbones. Invertebrates are animals without spines.

I will have the students look again at their animal cards and see if they can group the animals by vertebrates or invertebrates. They will have resource materials available for them to use and can use any other information they think would be helpful.

Once the students have done that I will let them know that the vertebrates can be divided into smaller groups according to other characteristics that they possess. They can also be birds,

amphibians, reptiles, fish, or mammals. We will discuss what characteristics determine which group they belong in. First I will ask the students to talk in their groups and think of some other ways that they have seen vertebrates classified as. Then we will go through each category and point out the important characteristics.

**Birds have feathers and their young are born as eggs that have shells**

**Fish have gills, are cold-blooded and breathe oxygen through the water**

**Amphibians and Reptiles are cold-blooded Amphibians spend part of their life on land and part in water. Reptiles have water proof skin and need the sun to help warm their bodies.**

**Mammals are warm-blooded, have fur or hair and feed their young with milk**

I will then have the students then group their animal cards according to these categories.

**\*Closure**

(10 min)

I will again go through all the groups and have them help determine whether or not the groups were successful in grouping their animal cards. Again, I will reiterate that scientists work together to develop and test their ideas. I will make notes of which groups were able to successfully group the animals and those that may have had difficulty in doing so.

## Fact Sheet

### Beaver Facts:

Beavers spend most of their time in rivers and streams. Beavers are covered with a fur that is water-proof. They nurse their young with milk. Beavers create dams to raise water levels so they can build their homes, or lodges, in the water. Beavers eat the leaves, roots, cambium, and bark of trees such as aspen, willow, and cottonwood. They also eat clover, apples, corn, grasses, water lilies, and other aquatic vegetation. A beaver's teeth will grow throughout its lifetime; gnawing on trees keeps them from overgrowing.

Source: [http://www.apnm.org/campaigns/beavers/General\\_info.php](http://www.apnm.org/campaigns/beavers/General_info.php)

### Bird Facts:

Birds have feathers and wings. Some birds are able to fly while others are not. Birds can be found all over the world. They lay hard shelled eggs. They eat a variety of things like fish, plants, insects, and worms.

Source: McGraw Hill Science book

### Bug & Insect Facts:

There are between 15 and 30 million different types of bugs and insects around the world. They have hard-shelled bodies called an exoskeleton which protects their insides. They eat a variety of plants and decaying matter. Without bugs and insects the dead leaves and other matter would not be broken down into soil.

Source: <http://coolbugstuff.com>

### Coral Facts:

Coral are animals that do not have backbones. They live in the ocean in tropical climates most often in areas known as reefs. Most eat algae and some even eat small fish.

Source: <http://animals.nationalgeographic.com/animals/invertebrates/coral.html>

### Crabs & Shrimp Facts:

Crabs and shrimp live in salt water. They are part of a family known as crustaceans. They shed their skin in order to grow. Crabs and shrimp do not have backbones.

Source: <http://www.ncfisheries.net/kids/bluecrab.htm>

## Crocodile Facts:

Crocodiles are cold blooded creatures with scaly skin. They can be found in warmer climates throughout the world. They lay soft shelled eggs and feed their young food they capture. They eat things like birds, small animals, fish, and reptiles.

Source: [http://www.defenders.org/wildlife\\_and\\_habitat/wildlife/crocodile.php](http://www.defenders.org/wildlife_and_habitat/wildlife/crocodile.php)

## Fish Facts:

Fish can be found in fresh and salt water. Fish found in salt water can only live in salt water. Fish found in fresh water can only live in fresh water. Fish breathe oxygen in the water through their gills. Fish eat a variety of foods; some eat other fish while others eat only plant life or algae. Fish are cold blooded and their temperature changes with the water they are in.

Source: McGraw Hill Science book

## Flatworm Facts:

Flatworms do not have backbones. They live mainly in the sea. They are parasites because they live off of other animals.

Source: <http://animals.howstuffworks.com/worms/flatworm-info.htm>

## Frog Facts:

They are cold blooded. Because they are cold blooded they can be found in warmer parts of the world. During cold weather frogs burrow into the mud and hibernate. They can absorb water through their skin so they do not have to drink water to live. They live on both land and water. A frog eats insects, worms, spiders and other bug-like creatures. Frogs are born as eggs, when the egg hatches they become tadpoles (which look almost like small fishes) when they grow up they lose their tadpole tails.

Source: <http://www.kiddyhouse.com/Themes/frogs/frogs.html>

## Gorilla Facts:

Gorillas are found in the wild in the country of Africa. Gorillas eat seeds, fruits and other parts of plants. They have fur and nurse their young with milk.

Source: <http://www.seaworld.org/infobooks/Gorilla/home.html>

## Iguana Facts:

Iguanans are cold blooded creatures that live in warmer climates. They live in burrows and some species grow to be quite large. They lay eggs, and eat insects and plants.

Source: <http://kids.yahoo.com/reference/encyclopedia/entry?id=iguana>

## Jelly Fish Facts:

Jelly fish live in the ocean. They are not fish; they have no bones, and no brain. They eat small fish and sea life they catch in their poisonous tentacles.

Source: <http://www.nationalgeographic.com/ngkids/9608/jellyfish/>

## Lizard Facts:

Lizards are cold blooded creatures that need warmer climates to survive. Their skin is covered with scales. Most lay eggs, and eat insects and rodents.

Source: <http://academickids.com/encyclopedia/1/li/lizard.html>

## Oyster & Scallop Facts:

These animals are part of the shellfish family. They live in oceans and have shells to protect their soft bodies. They catch and eat small ocean organisms through a filter system in their bodies.

Source: <http://www.ncfisheries.net/kids/shellfish.htm>

## Pika Facts:

“Pika, a small furred animal found in the high mountains of Eastern Europe, Asia, and western North America. It is sometimes called rock rabbit, whistling hare, or little chief hare, but is only distantly related to hares and rabbits.” Pikas’ nurse their young with milk. They eat grasses and other small plants. One of their nick names is hay-stacker because they stack and store food outside their burrows, holes they dig in the ground for their homes.

Source: <http://animals.howstuffworks.com/mammals/pika-info.htm>

## Platypus Facts:

Platypuses live in Australia. They spend most of their time in the water. Their bodies are covered with fur. They lay eggs and nurse their young with milk. They eat insects, larva, shellfish and worms.

Source: <http://animals.nationalgeographic.com/animals/mammals/platypus.html>

## Salamander Facts:

Salamanders have short legs and a long tail. They have no scales. They can live on water or on land. Most can be found near water sources. They are cold blooded and live in warmer climates. Salamanders are born as eggs; they hatch into tadpole-like form before they grow to be adults. Unlike the frog a salamander keeps its tadpole tail. Salamanders can eat worms, bugs, snakes, insects, spiders, slugs, and leaches.

Source: <http://rochester.kidsoutandabout.com/main-columns/nature/salamanders.html>

## Snake Facts:

Snakes are cold blooded creatures that need warmer weather to survive. They hibernate in the winter under the ground. They lay eggs. Snakes eat things whole like small animals, eggs, and insects. Some snakes have poison to help them catch their food while others squeeze their food to death. Snakes have scales on their body and shed their skin as they grow.

Source: <http://www.wnyherp.org/herp-information/reptile/snake.php>

## Spider Facts:

“Spiders are not insects. Insects have three body parts and six legs, whereas spiders have eight legs and two body parts, the abdomen and the thorax.” Spiders have no bones. Most spiders eat insects. There are many different kinds of spiders which can be found around the world.

Source: <http://www.americanhumane.org/kids/spiders.htm>

## Sponge Facts:

Sponges are simple animals that live in the ocean. They have no bones. They get oxygen and particles of food from the water.

Source: <http://library.thinkquest.org/26502/level3/1/info1.htm>

## Squirrel Money Facts:

Squirrel monkeys live in the forest and swamp areas of South and Central America. They are covered with fur and the mothers nurse their young with milk. They eat fruits, seeds, insects, and at times will also eat fruit bats.

Source: <http://kids.yahoo.com/animals/mammals/9785--Squirrel+Monkeys>

## Starfish Facts:

Starfish live in the ocean. They are not fish. They have no bones. They can re-grow their limbs. They use their limbs to crawl around to hunt for shellfish to eat.

Source: [http://www.essortment.com/all/kidsstarfish\\_rsd1.htm](http://www.essortment.com/all/kidsstarfish_rsd1.htm)

## Turtle & Tortoise Facts:

Turtles are cold blooded creatures that need warmer temperatures to survive. In the winter they burrow into the ground and hibernate till spring. They have soft bodies and a hard shell. Some live in water, some on land and water, and tortoises live only on land. They eat mostly insects and plants.

Source: <http://42explore.com/turtle.htm>



Animal Cards Resources

10/13/08

[http://www.ourlosbanos.com/homeschool/printables\\_science.html](http://www.ourlosbanos.com/homeschool/printables_science.html) main site

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[http://www.ourlosbanos.com/homeschool/printables/vertebrates\\_mammals.pdf](http://www.ourlosbanos.com/homeschool/printables/vertebrates_mammals.pdf)

[http://www.ourlosbanos.com/homeschool/printables/vertebrates\\_fish.pdf](http://www.ourlosbanos.com/homeschool/printables/vertebrates_fish.pdf)

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[http://www.ourlosbanos.com/homeschool/printables/invertebrates\\_insects.pdf](http://www.ourlosbanos.com/homeschool/printables/invertebrates_insects.pdf)

[http://www.ourlosbanos.com/homeschool/printables/invertebrates\\_aquatic.pdf](http://www.ourlosbanos.com/homeschool/printables/invertebrates_aquatic.pdf)

*S Nice job*

Name: Carrie Reno

**Science Lesson Self Assessment, Part 1, Criteria**

To be filled out after presenting to students and viewing tape

Criteria:	Student	Instructor
Goals of the lesson stated explicitly	<u>yes</u>	<u>✓</u>
Content standards incorporated and identified (Circle: National, State, District)	<u>yes</u>	<u>✓</u>
Process skills identified in lesson plan (list at least one): <u>Communication</u>	<u>yes</u>	<u>✓</u>
Inquiry approach used in the lesson	<u>yes</u>	<u>✓</u>
Age level clearly stated in the lesson plan	<u>yes</u>	<u>✓</u>
Content is age appropriate according to <u>Benchmarks</u>	<u>yes</u>	<u>✓</u>
Learning activities develop concepts and skills identified	<u>yes</u>	<u>✓</u>
If lesson builds on previous work, this is stated	<u>yes</u>	<u>✓</u>
Teacher identifies appropriate assessment to document student progress (evidence of learning)	<u>yes</u>	<u>✓</u>
Lesson and plan integrates other disciplines Circle: art, reading, writing, literature, math, Other <u>Language Arts</u> → <u>Speaking in class group.</u>	<u>yes</u>	<u>✓</u>

Comments from cooperating teacher: *J Radovich*

- 1 - GOOD INTRODUCTION - STUDENTS KNEW EXACTLY WHAT TO EXPECT
- 2 - GREAT CLASS DISCUSSION - CARRIE DID NOT JUST TELL STUDENTS HOW TO GROUP ANIMALS, SHE ASKED THEM WHICH GOT THEM INVOLVED WITH THEIR LEARNING.
- 3 - "6 INCH VOICES" WAS STATED FOR VOLUME CONTROL - LOVED IT! WILL USE IT MYSELF!
- 4 - CARRIE WALKED AROUND THE ROOM TO MONITOR THEIR PROCESS AS THEY WORKED IN GROUPS.
- 5 - CARRIE REALLY ENJOYED HERSELF, SHE SEEMED RELAXED AND NATURAL

GOOD CONCLUSION OF LESSON

STUDENTS RESPONDED VERY WELL TO HER

Science Lesson Self Assessment, Part 2, Narrative

Good

Name: Carrie Reno

1. How did your teaching of this lesson match your expectations?

I thought that this lesson would take 45 min. and it did. I also thought that there might be students who had more background knowledge about particular animals and there were. This really helped the lesson go smoothly because the students were able to tap into their background knowledge about animals to help them determine how they should be grouped.

2. Did your lesson meet the objectives? Provide evidence.

Yes. The students were not only able to determine their own methods of grouping, but were also successful in grouping the animals according to vertebrates and invertebrates. They further grouped the vertebrates according to species. I also checked their understanding of the concepts about organisms characteristics and why they would be grouped the way they were.

3. What changes would you make before teaching this lesson again?

I would have more in-depth animal fact sheets for the students to use. I would also change the font so that it was larger and multiple students in the group could read it. The students found that there was not the most complete information on the fact sheet, however this led them to problem solve by finding information that was posted around the room. I would have also directed them to open their science text to the pages that informed them about grouping vertebrates. Though I told them how they were grouped, some students may have been able to figure it out better by having that written out too.

good ideas

4. How will those changes improve your lesson?

I think having a more in-depth fact sheet would improve the ability for other students to make accurate groups. This group was more advanced in their prior knowledge about animals and their ability to problem solve. The next class may not be as advanced in those ways and having a more complete fact sheet would be most useful. I think it would also help the students to see the criteria for placing vertebrates into smaller classes. I gave the directions orally, however there may be some students who need to see it written down too.

Looks like your cooperating teacher learned from you.