

Morgan Clark
Formal Lesson Plan 4
11.2.16

Location: Woodland Hills Academy, LAUSD
Master Teacher: Maricela Ojeda-Perez
Class: "Success" Period- Marine Biology & Zoology

Topic: Reptiles- Form Meets Function

❖ **Lesson Objective**

❖ **"Students will analyze how form meets function in different reptiles by matching anatomical features to the ecological needs of different reptile groups."**

❖ **State Standards Addressed:**

- *Next Generation Science Standards for California Public Schools (MS-LS1-4).*
 - Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors affect the probability of successful reproduction of animals.
- *California Common Core State Standards Connections:*
 - ◆ *ELA/Literacy –*
 - *RST.6–8.1:* Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-6)
 - *RST.6–8.:* Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. (MS-LS1-6)

Instructional Procedures:

❖ **Anticipatory Set-**

- Today we are going to discuss a specific class of animals- to demonstrate what type of animals we're going to be talking about, I brought in a special guest!
- (Reveal guest animal) Talk about type of snake, different characteristic these snakes have, where they live
 - Gopher snake: this is a nonnative snake to this area, it is actually a gopher snake native to Northern California
 - Eats small rodents
 - Gopher snakes are often mistaken for rattlesnakes, and so they are killed even though they are an important species for keeping small rodent populations in check!
 - Now that we have met the snake, we are going to meet some other groups of reptiles that share special characteristics as well as have their own unique traits

Perceived Objective and Rationale-

- We have been learning about what makes an animal, and how these different animals are classified using taxonomy...
- Today we're going to be focusing on a specific *class* of animals, Class Reptilia
- Chance the snake is one example of an animal that is a reptile, but there are many different groups within this class
- Each group has different features because they are *adapted* to living in different conditions
- Today we're going to talk about different special characteristics each group of reptiles has, and how these characteristics help them in their natural environment!

Input-

- Pass out guided note taking sheet
- Pass out vocabulary sheet (including modified definitions and pictures)
- See PowerPoint Presentation for specific slide info
 - Have students read each bullet point off of the slides to ensure they are engaged with each new topic
 - What are structure and function? Slide 1
 - ◆ Physical structures in animals show what function those animals serve in their environment!
 - ◆ If something has wings we know it can probably fly
 - ◆ If something has large eyes we know it can see well so it might live in the dark
 - ◆ When we discuss “form meeting function” or “structure and function” form and structure mean the same thing. In this case we use the terms “form” and “structure” to refer to the physical characteristics of the animal that allow them to better survive in their environment
 - ◆ Most of the characteristics, or the structures of the animals we are about to discuss are visible on the outside of the animal
 - Slide 2- Characteristics of most reptiles
 - ◆ Tough, dry skin with scales (not slimy!)
 - ◆ Eggs with shells
 - ◆ Breathe with lungs
 - ◆ Ectothermic
 - ◆ Vertebrates (contain a spine)
 - ◆ When we talk about Class Reptilia, nearly every animal in this taxonomic class will share these characteristics. Sometimes common misconceptions about reptiles lead to a misunderstanding of their general characteristics. These are five things we need to keep in mind as we learn about specific groups of reptilians.
 - Slide 3-
 - ◆ Think, Pair, Share!
 - We have done think pair shares as a class before, turn to your table partner and discuss this question- If a reptile lives in the desert, what is

one adaptation it might have to the hot, dry environment? And then we will discuss as a class!

- Slide 4-
 - ◆ **Kinetic skull:** jawbones and skull bones have a greater range of motion to allow them to swallow prey whole
 - ◆ **Fangs:** Kill their prey by injecting them with **venom**
 - ◆ Kinetic is one of the words on your helpful terms and vocabulary sheet: what do we mean when we discuss kinetic in a scientific setting? We use the word kinetic to refer to something that has a good range of motion. In this case snakes have an even greater range of motion in their jawbones than we do. Everyone open your mouth and chomp as wide as you can on the air! That's the extent of our jaw motion, but a snake can open its mouth so wide it can swallow prey that is much larger than it's own body size
- Slide 5-
 - ◆ **Belly scales:** Specialized motion allows them to move without legs
 - ◆ **Chemosensory organs** allows them to detect chemicals from prey
 - ◆ **Heat sensing organs** allow snakes to better "see" their prey by sensing their body heat
 - ◆ We can see an example of how a snake would see its prey using the heat sensing organs. This is a thermal image of a mouse, and the different colors correspond to the different amounts of heat given off by the animal. Many snakes do not see like we do, their eyes are not as developed, but they can sense their surroundings in this way, and this is one way they can differentiate between objects that are alive or not.
- Slide 6-
 - ◆ Movable eyelids
 - ◆ Ear opening
 - ◆ Drop their tails when attacked!
 - ◆ **Tetrapod:** 4 legs for movement
 - ◆ If a tetrapod is an animal with four legs, what are some other tetrapods that we know of?
- Slide 7-
 - ◆ Feet are modified as **flippers**
 - ◆ **Shell** for protection
 - ◆ **Specialized muscles** for breathing
 - ◆ Because turtles have rigid shells for protection, their muscle structure inside their body is shaped differently so that they can still breathe within the confines of their shell
- Slide 8-
 - ◆ **Beak** made of keratin and strong jaws
 - ◆ **Ribs are fused** to shell
 - ◆ 2 Part shell made up of bony plates
 - ◆ Keratin is a protein structure present in many animals and certainly all mammals. Does anyone know what on our bodies is made of keratin? Our

hair and nails. Keratin forms hair, feathers, teeth, claws and beaks throughout the animal kingdom.

- Find the Animal! Activity: Students will work in groups of two with their table partners
 - Pass out papers for each group (see attached materials): each group should only receive one characteristic, and the matching characteristic should be placed far away from the corresponding group
 - Instructions on the power point (slide 9)
 - Instruct the students to signal the completion of their match by walking to the front of the room where a poster board will be displayed. They may attach their match with tape. This will create an easy visual representation of who found their match first. If their match is not correct, they must remove the pictures from the board and continue hunting for the corresponding characteristic.
- Student group that wins the activity gets a picture with the snake!

Modeling-

- The guided note taking sheet is formatted with an example at the top of the page, so that students may refer back to this example even as we progress through the PowerPoint
- Model how the activity will proceed with an example and instructions on the PowerPoint
 - Have students read each bullet point aloud as they anticipate to do the activity (slide 10)
 - Slide 11- Demonstrate the exact example of what is expected of the class during the activity by modeling the relationship between the example prompt and the matching characteristic
- Instructions for the activity will be on the PowerPoint for students to reference during the period and throughout the duration of the activity

Guided Practice-

- For the lecture: after each information-rich slide, ask for student examples of places or things they have seen that display different reptile characteristics. This will engage them as well as allow them to make personal connections to the material in lecture
- Think, Pair, Shares: For the think pair share: do an example with Mrs. Ojeda of what a conversation in the think pair share style would look like

Check for Understanding-

- Asking for student examples during the PowerPoint ensures that students fully understand the different terms, and how these relate to the physical structures we can see in the animal
- Ask questions such as, “If a mystery animal has this characteristic, which group might it belong to? Why?”
- Before the start of the activity: quickly review some of the slides and ask questions such as, “If this characteristic, or structure is _____, what is the function, or purpose of that structure?”

- Instruct students to write down one specific example of how form meets function in this way on the bottom of their note taking page

Independent Practice-

- The first form of independent practice will be the time in which students work with their table partner to find the matching characteristic
- The second form of independent practice will be the time in which students work on their own to read the passage, annotate the text, and choose three reptile adaptations to sketch on the provided sheet. Describing how the structure they selected relates to the function of that animal within its environment will serve as reinforcement through independent practice
- The independent practice will serve as their form of performance assessment. Their ability to understand and apply the different adaptations of each reptile group will be evident with their completion in matching each pair in the activity

Closure-

- All correct matches can be found on the PowerPoint
- Once the first team has “won” the activity, announce to the class that there has been a winner, but the activity will continue for one more minute to allow the rest of the teams to find their match
- When they think they have found their correct match, instruct students to stand around the perimeter of the room with their entire team, and hold each characteristic up, facing the rest of the room
- When all teams have assembled in a circle, move through each team, asking them to display the characteristics they matched, and have one team member explain why they chose those two characteristics to go together. If they have the correct match, they may tape it to the poster board in the front of the room. After they have taped their correct match they may sit down at their desk.

❖ In case you have extra time:

- If there is extra time: Pass out the paper entitled “Reptiles” and the paper entitled “Reading Notes”
 - Instruct the students to read the passage and note the different adaptations and characteristics for different reptile groups
 - Students will use the “Reading Notes” sheet to organize the passage information; instruct students to draw sketches of 3 special adaptations of reptiles.
 - In addition to the sketches, instruct students to write one sentence explaining how the form of that animal enables it to serve a specific function in its environment. Remind them of the “big eyes” and “wings” example at the beginning of the PowerPoint
 - Detail and color count! Tuck this into the notebook and save for the next period.

Differentiation-

- Vocabulary sheet with words, definitions, and pictures of the defined word assist both English language learners and non EL students as technical scientific vocabulary is new and challenging for everyone

- The completed example of the first two rows on the guided note taking sheet will be especially helpful for students that have trouble concentrating their attention for longer periods of time; the example will be a constant reminder of what is expected throughout the lesson
- The guided note taking sheet assists with clear organization of lecture information that students can refer back to during independent practice
- A variety of teaching techniques cater to a variety of learners and multiple intelligences: there are listening, kinesthetic, visual, and tactile components to this lesson which will be useful for students with IEP's- especially those that have trouble focusing on a single task
- The lesson is structured so that students will never have to go more than a few minutes without interacting by talking. This breaks the lesson up and creates a more engaging environment for students who might have trouble participating in other ways
- All necessary directions will be put in the PowerPoint. This allows students to reference them more than once to gain understanding
- Talk about differentiation for 2 focus students