

## **Adaptations of Turtles Lesson Plan (Level 1 Inquiry – Confirmation)**

### **Grade Level**

Grade 4

### **Science Concept**

Animals have adapted special characteristics that allow them to thrive in their unique habitats.

### **Relationship to California Science Content Standards**

6. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

- a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.

### **Objective**

Students will explain how different turtles' physical characteristics are environmental adaptations by filling in a comparison chart.

### **Conceptual Background**

Turtles have many physical similarities, but different species have developed adaptations that allow them to live in their unique environments. They can be aquatic, semiaquatic or terrestrial.

### **Materials**

1. At least one (1) clear photograph of a sea turtle and one (1) clear photograph of a slider
2. Chalkboard, dry erase board or large sheet of butcher paper and marker for class comparison discussion chart
3. Comparison chart worksheets

### **Engage:**

Bring the ornate box turtle in for display. Give students at least three minutes to get a close-up look at the turtle and ask students to write down observations about the turtle on blank sheets of paper or in their science journals. *Ask students:* What do you notice about the turtle's body? Think of textures, colors and shapes. What do you notice about how the turtle moves?

**Explore:**

Show the class pictures of the sea turtle. Lead a class discussion on where the turtle spends most of its time and ask students how they think the parts of the turtle’s body helps it thrive in that environment. Write “sea turtle” at the top of the board or paper and jot down students’ ideas (e.g. flippers for swimming) beneath the turtle’s name. Draw a dividing line on the board and write the name “slider” on the other side. Place the picture of the sea turtle where students can still see it and present the picture of the slider. Repeat the same activity, writing down students’ ideas on the “slider” side of the board. Place the photos side-by-side and engage in a further compare/contrast conversation. If the students struggle to come up with ideas:

*Ask* leading questions such as:

What part of the sea turtle’s body do you suppose helps it swim through the water?

What do you notice about the differences between the sea turtle’s shell (or feet) and the slider’s shell (or feet)?

Why do you think the shells (or feet) are different?

What part of the sea turtle’s body do you suppose would make its life more difficult if it had to live on land instead of in the water?

**(Class chart sample)**

**Leatherback Sea Turtle | Slider**

**flippers / claws and webbed toes**

**flat shell / slightly domed shell**

**shell blends / shell looks separate**

**Explain:**

After the class discussion, bring the Ornate box turtle back to front-and-center and *Ask* students to ponder: Based on the physical characteristics you jotted down about this Ornate box turtle I brought in today, where do you think it spends most of its life? What about its body gives us clues about its habitat? If you are comfortable touching the turtle, bring it out of its enclosure. Allow students to look on and make observations as you point to different areas of its body.

*Ask* students some leading questions, including:

*What do you see about the turtle’s shell?*

*What do you notice about the turtle’s legs and feet?*

*Do you see any webbing between its toes?*

Create a third column on the comparison chart with Ornate box turtle characteristics. Once you feel that most students have a firm grasp on the subject, describe some known adaptations of aquatic turtles such as the sea turtle, semiaquatic turtles such as sliders and terrestrial turtles such as the Ornate box turtle.

**Elaborate:**

Hand out comparison chart worksheets. Instruct students to fill in each blank box with at least one physical adaptation appropriate to that body feature. Students must include at least one function per adaptation. If needed, get the ball rolling by offering a sample response for one box.

Hand out word search worksheets to promote development of lesson-related vocabulary.

**Evaluate:**

- (a) Summative – Correct students’ worksheets for thoroughness and accuracy. Use a point scale based on level of achievement. For example, offer each student 2 full points for each box that is correctly and completely filled out and 1 point for each box that is half-completed or partially correct for a total possible score of 24 points. As an alternative, make the total possible score of 18 and award extra credit points for extra attempts to fill out boxes in the “Other” category.
- (b) Formative – Note students’ level of participation throughout the lesson. For example, students who intently observe the turtle, engage in lesson-related conversations (when appropriate) with peers, jot down notes in their journals and make contributions to the class discussion on animal adaptations can receive full credit for this part of the evaluation. For a more formal evaluation, read each student’s journal after class and award points based on thoroughness and lesson-relevant notations.

**Differentiation Plans**

**Behavioral for Student A** – Simply having a live animal in the classroom may be one way to engage a student who is unmotivated or has trouble staying on task. Prepare further by considering the problem behavior when planning out your lesson and creating a back-up plan. For example, ask him to help you present the Ornate box turtle (without allowing him to touch the animal), and put him in charge of writing down students’ ideas on the board during class discussion. Focus on his skills and interests. If he is artistic, ask him to draw pictures of the animal adaptations in his journal and on the back of the worksheet.

**Cognitive for Student B** – Offer extra scaffolding for a student with a learning disability. For example, give her more time with the turtle and ask her more leading questions as she observes the animal. During worksheet time, place her in a group with peers of mixed abilities to encourage collaboration while helping prevent her from feeling like the underdog.

**Cognitive for Student C** – Encourage gifted Student C to help you investigate more about turtle adaptations as you progress through the lesson. For example: During the **Explain** portion of the lesson, if a student raises his hand and asks a questions, “Why do sea turtles have claws?” and you don’t know the answer, ask her to use the Internet on a class computer to look up the answer for you. Prepare in advance by opening tabs on a computer for at least four different valuable wildlife websites.

A list of high-quality, kid-friendly websites about animals can be found on this page:

[http://www.kids.gov/k\\_5/k\\_5\\_science\\_life.shtml](http://www.kids.gov/k_5/k_5_science_life.shtml)

**Affective for Student D** - For shy Student D who fears raising his hand in class, offer an alternative formative assessment by listening in on his contribution to group discussions. Also, approach his table during journaling/class discussion time to ask him some one-on-one open-ended questions about his observations. If needed, place extra weight on summative evaluation scores.

**Language Demands for Student E** - Give student E a front-and-center view of the Ornate box turtle and the images of other turtles.

**Language Demands for Student F** - Use clear body language, such as pointing directly to the feature of the animal being discussed (such as the flipper on a sea turtle) and then pointing directly to the aspect of the habitat (such as the water around the sea turtle), clearly using the word for each, to draw a connection between the feature and the environment.

**Language Demands for Student G** – Student G is somewhat proficient in oral English but struggles with written English. Ask her to discuss adaptations with you rather than telling her to write them in the chart. If bilingual students who speak the language of Student G are in your classroom, place ELs at a table with her and encourage a group discussion.

**Suggested Reading:**

Miller, S. S. (1999). *Turtles: life in a shell*. New York: Franklin Watts.

**Directions or Special Instructions; Safety Concerns, etc.**

- Generally, students are only permitted to closely observe the Ornate box turtle. With permission from SERC, they may handle the animal under teacher supervision as long as the teacher has received proper training by SERC.
- Free images of various turtles can be found on the stock photo website **stock.xchng**. Quickly sign up for a free account (<http://www.sxc.hu/signup>) to download the high-quality images on the following page.

**Sea Turtle Images**

<http://www.sxc.hu/browse.phtml?f=download&id=117369>

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<http://www.sxc.hu/browse.phtml?f=download&id=1240910>

**Slider Turtle Images**

<http://www.sxc.hu/browse.phtml?f=download&id=714500>

<http://www.sxc.hu/browse.phtml?f=download&id=816938>

<http://www.sxc.hu/browse.phtml?f=download&id=559641>

<http://www.sxc.hu/browse.phtml?f=download&id=790359>

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**Box Turtle Images**

<http://www.sxc.hu/browse.phtml?f=download&id=1363663>

<http://www.sxc.hu/browse.phtml?f=download&id=1362997>