

3: Turtles Vs. Tortoises (Guided Inquiry)

Grade Level: 6

Science Concept: Students explore the differences between turtles and tortoises by matching different chelonians (turtles/tortoises) with the appropriate ecosystems based on examination of their physical features. Students will apply knowledge of ecosystems to determine the differences of turtle and tortoise characteristics and ecosystems.

The main point is to examine the difference between land dwelling and water dwelling organisms in their respective ecosystems. Turtles are water dwelling creatures, so either live in the ocean (sea turtles) or on land near fresh water. Tortoises are land dwelling creatures, so can live in places where water is more scarce, such as the desert. They have different roles in the different ecosystems, mainly based on what they eat.

An *ecosystem* is a community of living (biotic) and non-living (abiotic) things that work together. *Ecosystems* have no particular size. More on ecosystems:

http://www.aurumscience.com/environmental/4_ecosystems/lecture.html

Relationship to CA Science Content Standards:

5. Organisms in ecosystems exchange energy and nutrients among themselves and with the environment. As a basis for understanding this concept:
 - c. *Students know* populations of organisms can be categorized by the functions they serve in an ecosystem.
 - d. *Students know* different kinds of organisms may play similar ecological roles in similar biomes.

Learning Objectives:

1. SW compare/contrast turtles and tortoises, factoring in physical characteristics of each as well as their respective ecosystems.

Evaluation Ideas:

1. Formative: SW discuss in small groups in which ecosystems they think different turtles and tortoises live. The teacher will monitor discussion and progress, and students will use guided questions to help figure out where each chelonian lives and why. SW fill out a worksheet for this activity.
2. Summative: SW complete a Venn-diagram comparing and contrasting turtles and tortoises, including: habitat, food, size, classification, reproduction.

Conceptual Background:

Main similarities: both are chelonians, in the same class, kingdom, family, and crown group. They both have shells and similar physical features (colors, shape, etc). Both lay eggs on the ground. The mother burrows the eggs, which incubate for 90-120 days.

Main differences:

- turtles are water dwelling; tortoises are land dwelling
- turtles have flat shells and webbed feet with long claws; tortoises have dome shaped shells with short and sturdy feet.
- turtles are herbivores and carnivores; tortoises are herbivores.
- turtles live 20-40 years; tortoises live up to 150 years.
- turtles lay eggs and leave them; tortoises provide protection to hatchlings for about the first 80 days.

*For more information, go to: [http://www.diffen.com/difference/Tortoise vs Turtle](http://www.diffen.com/difference/Tortoise_vs_Turtle)

LESSON

Implementation Plan:

Engage- Show the students a picture of one of the turtles/tortoises. Ask them to write down as many things as they can associated with the picture. They can be single words or phrases associated with prior knowledge and/or experiences. Give students 1-2 minutes to do this, then they will do a think-pair-share. After some share outs, present the big question: What is the difference between a turtle and a tortoise? Tell students they are going to be scientists with a goal to classify and differentiate turtles and tortoises.

Explore- Game: Match-up. Students will work in groups to match up pictures of turtles and tortoises to different types of ecosystems. They will only have their prior knowledge of ecosystems and the pictures to try to figure out where the different chelonians live. Elicit the definitions of an ecosystem, and some strategies they can use (ex: physical features of organisms give clues to ecosystem). Students will discover through observation the possible ecosystem of turtles vs tortoises. Give students a time frame, and formatively assess their discussions.

Explain- Based on personal observations and previous knowledge, students must give explanations for why they matched up certain turtles/tortoises with certain ecosystems. Each group will be given the opportunity to defend their choice, and make changes if necessary. The class will decide which turtle goes where, and the teacher will provide guided questions/ things to consider as necessary (without giving the answer away). For example: What characteristics of the turtle/tortoise made you think that it belonged in the ____

ecosystem? What characteristics of the ecosystem made you believe the ____ turtle/tortoise lives there?

Elaborate- Once the class has come to a general consensus of where they think each chelonian might live, they can use reference books (on turtles/tortoises and different ecosystems; see suggested reading list) to find evidence that supports their claims. They must then generalize and determine what the main difference between the turtles and tortoises are. They should consider: ecosystem, habitat, diet, physical characteristics, reproduction, and lifespan.

Students from each group will then share out what they think are the main differences (making a Venn-diagram on a poster and explaining it to the class). Based on the general consensus and with some guided questions from the teacher, the class will make a class Venn-diagram to put on the wall.

Evaluate-

- a. summative- SW complete a Venn-diagram comparing and contrasting turtles and tortoises, including: habitat, food, size, classification, reproduction.
- b. formative- SW discuss in small groups in which ecosystems they think the turtles and tortoises live. The teacher will monitor discussion and progress, and students will use guided questions to help figure out where each chelonian lives and why. They will record their answers and reasoning on a worksheet.

Extension activities:

1) Students pick one of the turtles/tortoises and make a powerpoint about it, including pictures, basic information (habitat, food, size, classification, reproduction) and interesting facts.

Differentiation Plans:

Behavioral for Student A: Student A will help keep time for the match-up game, as well as help hand out materials. The student will be provided with incentives (group and individual) as necessary. The teacher could also present a challenge of thinking of as many reasons as possible why they think a turtle/tortoise belongs in a certain ecosystem. The group that comes up with the most credible reasons gets some sort of reward.

Cognitive for Student B: The student will work in a group to complete activities, and have sentence frames provided. The teacher should be sure to check in on this student to give any necessary additional guidance or explanation. The student will have visuals during the match up, and base observations on these. There should also be material /books/ resources for different reading levels provided during the the elaboration portion.

Cognitive for Student C: The students will be given a challenge of exploring how the chelonians contribute to their respective ecosystems.

Affective for Student D: The student will be encouraged to use supplemental materials/books to help group with vocabulary terms and participate in group discussions. The teacher will also go over proper language to use during group discussion, providing oral and written sentence frames (A: I think this means ___ because ___/ B: That could be true, but I think ____ OR I respectfully disagree, and think ____ because ____).

Language Demands for Students E, F, G

Student E: This student will have many visuals to use for the match-up game, and will have the opportunity to work in a group to help scaffold the information. The student will be provided with sentence frames for the group discussion as well as defined academic vocabulary on the board (habitat, ecosystem, etc). There should be level-appropriate books available as references. Cognates for key vocabulary (ecosystem, turtle, habitats) could be provided—ecosistema, tortuga, etc.

Student F: Directions will be written clearly and concisely (1. Look at pictures. 2. Match pictures of ecosystems with turtles or tortoises that live there (explain ecosystem). 3. Explain why you think that and record information on the chart). The student can use the visuals and supplementary materials as necessary.

Student G: The student will be encouraged to ask clarifying questions as needed, either to group members or teacher. Discussion sentence frames will be provided and key vocabulary defined. Teacher will model the activity/ provide an example.

List of Materials:

-turtle/tortoise pictures and ecosystem pictures (for match up—1 set per group)

- Ecosystems: Ocean, Desert, Pond, swamp, grasslands, island

Turtles: Painted turtle, California tortoise, ornate box turtles, Green turtle, Galapagos tortoise, Diamondback Terrapin

-Venn-diagram worksheet (1 per student)

-Ecosystem/turtle match-up chart (1 per student)

Directions or Special Instructions; Safety Concerns, Etc.

-No safety concerns. More information on ecosystems and turtles vs. tortoises is available at the websites listed in “Science Concepts” and “Conceptual Background.”

Suggested Reading:

Swartz, Stanley L. (2000). *Sea Turtles*. Carlsbad, CA: Dominie Press, Inc.

Taylor, Barbara. (2004). *Turtles and Tortoises*. London, England: Anness Publishing Ltd.