

Russian Tortoises in Bad Weather (Guided)

An Elementary Science Lesson Plan Designed For Group Inquiry Based on the 5E Inquiry Model

GRADE LEVEL: 7th Grade

SCIENCE CONCEPT (the Main Idea or Enduring Understanding): This lesson is aimed at helping students understand the concept of extinction. Students will think about how environments change and what animals need to do in order to adapt and survive.

RELATIONSHIP TO CALIFORNIA SCIENCE CONTENT STANDARDS:

Evolution

3. e. Students know that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient for its survival.

LEARNING OBJECTIVE:

Students will write a passage with at least 5 sentences regarding the Russian Tortoise facing an environment change.

EVALUATION IDEAS:

Formative:

1. The teacher will ask questions to students while they work on their statements in order to guide them toward the idea of extinction.
2. If students are having trouble thinking about an item to focus on, the teacher can list specific features of the animal to think about.

Summative:

1. Students will write a passage with at least 5 sentences regarding the Russian Tortoise facing an environment change.
2. Students will write their own definitions for extinction, survival, and adaptation.

CONCEPTUAL BACKGROUND:

There are three concepts that a teacher needs to know before teaching this lesson: extinction, survival, and adaptation. The teacher also must know a little background knowledge of the Russian Tortoise.

Definitions - (Lefers, 2004)

Extinction: Is the process in which groups of organisms (species) die out.

Survival of the fittest: In evolutionary theory the survival of only those organisms best able (fittest) to obtain and utilize resources. This phenomenon is the cornerstone of Darwin's theory of evolution by natural selection.

Adaptation: In the evolutionary sense, some heritable feature of an individual's phenotype that improves its chances of survival and reproduction in the existing environment.

Russian Tortoise: (Pirog, 2012)

- live in various habitats from deserts to steppes (grassland with few trees)
- limited to 4-5 months of activity due to cold winters and hot summers
- burrow into the ground to hibernate and stay moist

LESSON PLAN IMPLEMENTATION: This lesson is designed for group inquiry with up to four students.

ENGAGE – The teacher will ask the students to think about what if the summers were so hot and the winters were so cold that they wouldn't be able to go outside. Allow them to list their ideas for both seasons.

EXPLORE – The teacher can relate the topic to Russian Tortoises. This is where the teacher will explain how the Russian Tortoise is limited to 4-5 months of activity due to hot summers and cold winters. The tortoise solves this dilemma by burrowing into the ground and hibernating to stay moist. Pose the questions “What if the weather was bad all year round? What would the tortoise have to do in order to stay alive? What if the tortoise couldn't do anything?” Allow 10 minutes for students to talk amongst their groups and share ideas.

EXPLAIN – After groups have finished their discussion, they will present their findings. The teacher will guide their answers toward the concepts of extinction, survival, and adaptation.

ELABORATE – The teacher will have students learn the same concepts by applying a new situation to themselves. The teacher will give them the situation that they are stranded on an island and pose similar questions such as “What would your group do in order to stay alive? What if your group failed to do so?” Have the students reference the first worksheet to remind them of things they would need. Allow the students 5 minutes to discuss their ideas. Hold a quick class discussion to reinforce the concepts of extinction, survival, and adaptation.

EVALUATE –

Summative - Students will write a passage with at least 5 sentences regarding the Russian Tortoise facing an environment change.

Formative – The teacher will ask questions to students while they work on their statements in order to guide them toward the idea of extinction.

DIFFERENTIATION PLANS:

Behavioral for Student A – Make the student a timekeeper allowing everyone in their group to speak equally.

Cognitive for Student B – Give the student a longer timeframe to think about his/her solutions.

Cognitive for Student C – Allow the student to read off their group’s explanations.

Affective for Student D – Give the student the role of writing down the ideas of his/her group.

Language Demands for Students

E – Give the student a picture of a tortoise to help visualize.

F – Help the student visualize an island by drawing and describing what kind of island they will be on.

G – Write the vocabulary on the board

LIST OF MATERIALS (PER GROUP):

1. Paper
2. Worksheets
3. Picture of a Russian Tortoise

DIRECTIONS OR SPECIAL INSTRUCTIONS; SAFETY CONCERNS, ETC.

REFERENCES:

Lefers, M. (2004). Retrieved from

<http://groups.molbiosci.northwestern.edu/holmgren/Glossary/index.html>

Pirog, E. (2012). *Tortoises*. Neptune City: TFH Publication, Inc.