

BUILDING A BOX TURTLE SHELL

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): Box turtles have unique shells which help them survive in the wild. Each shell is different and variations among box turtle shells can determine a turtles, species, gender, and age (ARKive.org).

RELATIONSHIP TO CALIFORNIA SCIENCE CONTENT STANDARDS: 7.7 d. Construct scale models, maps, and appropriately labeled diagrams to communicate scientific knowledge (e.g., motion of Earth's plates and cell structure).

LEARNING OBJECTIVES:

1. Students will identify/ label all the parts of a box turtle shell by creating a box turtle shell model.

EVALUATION IDEAS:

1. formative:
 - The teacher will check students rough shell draft and assess for foundational understanding; correctness of parts and variations.
2. summative:
 - Teacher will collect the final box turtle shell models; check for correctness of parts and variations.

CONCEPTUAL BACKGROUND: Box turtle shells are unique in structure. ““The shell is made up of bony plates, or scutes, which are patterned with yellow lines radiating from the centre. The scutes on the lower shell (plastron) also bear this pattern. ..The plastron is hinged and can be closed completely against the carapace, allowing the turtle to completely withdraw its head and feet and enclose them within a protective ‘box’” . (ARKive.org)

LESSON IMPLEMENTATION PLAN:

ENGAGE –

1. Students will touch and feel a real box turtle shell. (The ornate box turtle and/ or shells are available for rent at SERC).
2. The teacher will ask students to write down at least 5 observations they have made about the shells.

EXPLORE –

1. Students will share their observations out loud to the class and the teacher will write them on the board.
2. The teacher will divide the students into groups of four, then assign them a topic/ observation that was written on the board.
3. The groups will research the topic more in-depth using turtle websites (see references and suggested reading list).

EXPLAIN –

1. Each group will share their findings to the class and explain the important components of the turtle shell. This should include an explanation of shell features and variations.

ELABORATE –

1. Students will take notes and compile a list of shell characteristics. They will illustrate a shell draft and label the parts.
2. The teacher will assess students' progress, to check if all of the labeled parts are correct. On the labels, student will also include the descriptions (for example, Scute- because this is an older turtle).

EVALUATE –

1. The students will use an up-side-down plastic bowl to create their turtle shells. The teacher will provide art supplies such as construction paper, glue and markers for students to be creative with their design.

(a) summative –teacher will collect turtle shell models and assess if all of the parts are included. Also, noting consistency with correctness and descriptions.

(b) formative – teacher will check for correctness as the students draft their designs; labeled parts and descriptions.

DIFFERENTIATION PLANS:

Behavioral for Student A-:

- This student can be closely supervised by the teacher during observation time.

Cognitive for Student B;

- Guided notes/ outline can be given during note taking time.

Cognitive for Student C:

- Graphic organizers can be used to collect data instead of writing research.

Affective for Student D:

- This student can choose to work with a group or one-on-one with the teacher during shell construction time.

Language Demands for Students E, F, G

- When compiling a list of shell characteristics, they can use illustrations instead of words.
- The teacher can provide sentence strips to provide a structure during research time.
- The teacher can model the steps of creating a turtle shell for them to follow.

LIST OF MATERIALS (PER GROUP):

- plastic bowls
- construction paper
- glue, scissors
- markers
- paper
- tape.

DIRECTIONS OR SPECIAL INSTRUCTIONS; SAFETY CONCERNS, ETC.