Lesson Plan: Reptile Architect Workshop

Materials Needed:

- Modeling clay in various colors (green, brown, gray, etc.) or a batch of salt dough
- A tray or piece of cardboard for the base
- Construction paper
- Toothpicks
- Fine-tipped markers or a pen
- Scissors
- A tablet or computer with internet access
- Optional: Googly eyes, small beads, or pebbles for texture

Subject: Biology

Topic: Reptile Anatomy and Function

Grade Level: 7th-8th Grade (Age 13)

Time Allotment: 60-75 minutes

1. Learning Objectives

By the end of this lesson, Aubrey will be able to:

- Create a 3D model of a specific reptile, accurately representing its key external features.
- Identify and label at least 8 major anatomical parts on the model (e.g., scutes, scales, nictitating membrane, nostril, tail, cloaca).
- Explain the function of at least three of these anatomical parts and how they help the reptile survive.

2. Lesson Activities & Procedure

Part 1: The "Mystery Reptile" Hook (5-10 minutes)

1. **Engage:** Show Aubrey a series of close-up pictures of unique reptile features without showing the whole animal. Use a search engine for images like:
    - The scutes on a turtle's shell
    - The eye of a chameleon
    - The rattle on a rattlesnake's tail
    - The scales on a lizard's leg
    - The heat-sensing pit of a python
2. **Discuss:** For each picture, ask: "What do you think this is? What kind of animal might it belong to? What do you think this part does for the animal?" This will spark curiosity and get her thinking about form and function right away.

Part 2: Reptile Anatomy Deep Dive (10-15 minutes)

1. **Guided Exploration:** Together, watch a short, engaging video about general reptile anatomy. A great option is "7 Reptile Features" by Untamed Science or a similar high-quality nature documentary clip.
2. **Introduce Terminology:** As you watch or right after, pause and discuss the key vocabulary. Use a clear online diagram of a lizard or turtle for reference. Focus on understanding the *purpose* of each part. Key terms to cover:

    - **Scales vs. Scutes:** Scales are overlapping folds of skin (lizards, snakes), while scutes are bony plates covered in keratin (turtles, crocodiles). What's the advantage of each? (Protection, preventing water loss).
    - **Nictitating Membrane:** A transparent third eyelid. Why would a reptile need this? (To protect the eye underwater or while digging, without losing sight).
    - **Nostrils (Nares):** For breathing. Some reptiles have them on top of their snout (like crocodiles) - why? (To breathe while mostly submerged).
    - **Tympanic Membrane:** The external eardrum.
    - **Cloaca:** The single opening for waste and reproduction.
    - **Jacobson's Organ:** A special scent organ on the roof of the mouth that snakes and lizards use by flicking their tongues.
3. **Choose a Subject:** Have Aubrey choose one specific reptile to be her "client" for the workshop. Will she build a turtle, a lizard, a snake, or a crocodile?

Part 3: The "Reptile Architect" Workshop (30-40 minutes)

1. **Blueprint:** Have Aubrey pull up a few good reference pictures of her chosen reptile on the tablet or computer. She should look at it from different angles.
2. **Construction:** Using the modeling clay, Aubrey will now build her reptile on the cardboard base. Encourage her to focus on getting the shapes and proportions right. This is a creative process, not a test of perfect sculpting. Remind her to include key features like the texture of the scales/scutes, the placement of the eyes, and the shape of the tail.
3. **Labeling:** While the clay is soft, create the labels.
    - Cut out small flags from the construction paper.
    - Write the name of one anatomical part on each flag (e.g., "Scutes," "Nictitating Membrane," "Nostril").
    - Tape each paper flag to a toothpick.
    - Carefully insert the toothpick flags into the correct locations on the clay model.

Part 4: Project Showcase & Assessment (5-10 minutes)

1. **Presentation:** Aubrey presents her finished reptile model. As she points to each label, ask her to explain the function of at least three parts.
    - Example question: "You've labeled the scutes on your turtle. Why are those important for a turtle's survival?"
    - Example question: "Tell me about the nictitating membrane. Which of your reptile's behaviors makes that part so useful?"
2. **Feedback:** Praise her creativity and her understanding of the concepts. Discuss any parts that were tricky to build or understand. Her completed, labeled model and her verbal explanations serve as the assessment for this lesson.

3. Differentiation & Extension

- **For an Advanced Challenge:** Have Aubrey research a unique or less common feature of her chosen reptile (e.g., a chameleon's projectile tongue, a basilisk lizard's ability to run on water, a gecko's specialized toe pads). She can then build this feature into her model and explain the science behind how it works.
- **For Extra Support:** If the sculpting is challenging, you can work together to form the basic body shape, and she can focus on adding the details and labels. You can also provide a pre-printed list of anatomical terms for her to choose from for her labels.