What Can We Eat With These Teeth?

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

Grade Level: This lesson is a level two inquiry and is intended for a first grade science classroom. Students will be investigating the different shapes of animal's teeth and how they relate to the foods animals eat.

Science Concept: This lesson plan aims to help first grade students understand the concept that the shape of an animal's teeth is related to the type of food it eats. This lesson also serves to help students learn how to make inferences.

Relationship to California Science Content Standards: (1.2.d): Students know how to infer what animals eat from the shapes of their teeth (e.g., sharp teeth: eats meat; flat teeth: eats plants).

Learning Objective: Students will correctly identify the foods that five animals (including the Coastal Range Newt) eat based on the shapes of their teeth.

Lesson Plan Implementation: Students will begin by working in pairs during the Explore phase of the lesson. Students will then work in groups of fours during the Explain and Elaborate phases of the lesson. For the formal assessment, students will work independently. Additionally, previous to the Explore phase, ensure that the materials have been set up. This will require different materials (books, photos, teeth/jaw models) to be put around the classroom. During the Elaborate phase, more materials will need to be set up, but these materials should be handed out to groups when appropriate.

Notes: This lesson can be done when the Coastal Range Newt is in the classroom or afterwards.

Materials:
• Coastal Range Newt 1.1 (one per student)
• Coastal Range Newt 1.2 (one per student)
• Assorted non-fiction books and photos featuring five different animals' teeth. (Be sure to pick a variety of animals. It is recommended to select two carnivores, two herbivores, and one omnivore).
• Animal teeth or jaw models (available through the SJSU SERC center)
• Staple removers (one per group of four students)
• Small/medium wood blocks (two per group of four students)
• Beef Jerky (two small pieces per group of four students)
• Shelled peanuts (If a student is highly allergic, peanuts can be substituted with crackers or banana) (two small pieces per group of four students)

- Paper towels
- Hand mirrors (optional) (one per student)
- *Whose Teeth are These?* By Wayne Lynch

Background Information (For Teacher)
The shape of animals' teeth can give us important clues as to what the animal eats. Animals that have really sharp teeth use their teeth for tearing and eating meat. Animals that only eat meat are called carnivores; some of these animals include tigers, lions, sharks, or polar bears.

Animals that have flat teeth use their teeth for grinding up plants, fruits, and vegetables. Animals that only eat plants are called herbivores; some of these animals include horses, deer, sheep, or giraffes.

There are some animals that eat both meat and plants; these animals have both sharp teeth and flat teeth. Animals that eat both meat and plants are called omnivores, which mean they eat everything! Some examples of omnivores are chimpanzees, brown bears, and humans.

Students will be determining the shape of the Coastal Range Newt's teeth based on its diet in this lesson. The Coastal Range Newt has very sharp teeth, which are used to eat worms, snails, slugs, sow bugs, insects, larvae, and other species' eggs. The pattern of the Coastal Range Newt's teeth are in that of a Y shape on the roof of its mouth; however, students will not be able to see this as they would not be allowed to handle the newt.

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Engage
Read the book *Whose Teeth are These?* by Wayne Lynch aloud to the students. As you read the book, show students the pictures of each unknown animal's teeth and have them guess what animal the teeth belong to. While reading the book, occasionally ask students what kind of food they think the animal might eat with its teeth. Some students may need more guidance, so be sure to ask students questions (including "What do you notice about these teeth?") to ensure that they are on the right track.

Explore
After the book has been read, split students into pairs. Tell students that they will be exploring materials about animals and their teeth. Hand out the Prediction worksheet (Coastal Range Newt 1.1) to students. Explain to students that during this exploration time, they will be exploring and observing different animals and their teeth. Tell student pairs that they will make observations and predictions about what type of food the animals eat based on the shape of its teeth and write down their observations and predictions on the Prediction worksheet. On this worksheet, students will draw a picture of each of the animal's teeth and write whether they think each animal eats meat, plants, or both. In case students need more guidance, here are some questions to help them: "What kind of food do you think an animal with really sharp teeth eats?", "What kind of

food do you think an animal with flat teeth eats?"

Explain
After ample time has been given to students for their exploration, instruct students to pair themselves with another group. Each student should be in a group of four. It may be easier for you to group them depending on your students. Tell each pair that they will then describe their observations on the animals' teeth shapes and what type of food they think each eats to each other. Student groups should explain to the each other how they think the shape of the animals' teeth helps the animal eat a certain type of food. As students share their observations, walk around the classroom and ensure that students are on task. Some teacher guidance may be necessary.

Elaborate
Once students have shared their observations with another group, all groups will do a hands-on activity showing how sharp teeth work to tear meat and flat teeth are used to grind up/eat plants. The following is the procedure for this activity:
1. Each group of four will need the following on a paper plate:
    1. Staple remover
    2. Two small/medium wood blocks
    3. Two small pieces of beef jerky
    4. Two shelled peanuts (crackers or banana if allergic to nuts)
    5. Paper towels
2. Assign each team member to one of the following "eating" roles:
    1. Sharp teeth eating meat
    2. Sharp teeth eating plants
    3. Flat teeth eating plants
    4. Flat teeth eating meat
3. To show sharp teeth eating meat, the student will use the staple remover to "bite" or tear the beef jerky. Was it easy or hard?
4. To show sharp teeth eating plants, the student will use the staple remover to "bite" or tear the peanut (cracker or banana). Was it easy or hard?
5. To show flat teeth eating plants, the student will use the two blocks to "chew" or grind the peanut (cracker or banana). Was it easy or hard?
6. To show flat teeth eating meat, the student will use the two blocks to "chew" or grind the beef jerky. Was it easy or hard?

Allow students to finish their "eating" activity, and then have the class come back together to discuss the results. Make conclusions about the foods that sharp teeth and flat teeth make, and write them on the board. A T-chart would serve this purpose best.

Evaluate
After the class discussion, you may do either one of two things: First, you could have the students view a feeding of the newt if the newt is in the classroom. If the newt has been returned, though, you could also pass around pictures of the types of food that newts eat (See "Background Information" for examples). Then, using what students have learned about animals' teeth, have students infer what shape the newt's teeth are based on what

food it eats. Discuss what students think as a class. If time permits, have hand mirrors for students to use to look at their own teeth. Ask them: "What shape are human teeth? What types of foods do we eat?" Lastly, pass out the Assessment worksheet (Coastal Range Newt 1.2) and give students ample time to complete during class time. This could also be assigned as homework.

Assessment
   (a) Formative: Monitor and guide students during the Explore, Explain, and Elaborate stages of the activity. Ask guidance questions to keep students on track and promote further inquiry.
   (b) Formal: Collect and correct the Prediction worksheet (Coastal Range Newt 1.1) and the Assessment worksheet (Coastal Range Newt 1.2) to ensure students have fully grasped the concept of the lesson (sharp teeth: eat meat; flat teeth: eat plants).

Differentiation Plans
   • Behavioral: For a class that has a high number of students with behavioral issues, do the Elaborate portion of the activity as a demonstration only.
   • English Language Learners: For English language learners, have the procedures for the Elaborate portion typed and available for each student. It may also be helpful to have photos or drawings of the procedures in addition to the typed procedures for easier understanding.