

## **Lesson 8: Investigation**

### Open Inquiry

**Grade Level:** This lesson is designed for a 5th grade science classroom.

**Science Concept:** This lesson is focused on helping students understand how to develop inquiry by posing questions and planning strategic actions to answer those questions.

**Relationship to California Science Content Standards:**

6c. Plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure.

**Learning Objectives:**

1. Students will formulate their own question about snakes and create a procedure for how to investigate the answer.

**Evaluation Ideas:**

1. formative: Students will complete brainstorm of questions about snakes that they want to know more about.
2. summative: Students will write a final report that documents the question that they have posed and the suggested methods for researching the question.

**Materials:**

1. KWL Chart Worksheet
2. Investigation Report Brainstorming Session Worksheet

**Lesson Implementation Plan:**

Engage – I will ask students to collectively fill out a K-W-L chart, which tracks what a student knows (K), wants to know (W), and has learned (L) about a topic, to engage students to think about what they already know and have already learned about snakes. Then, I will ask students what questions they still have about snakes that have not been answered thus far and write them down in the chart.

Explore – Students will then individually create a list of questions that they would be interested in exploring. This list could draw from the “W” column of the K-W-L chart, or could be new questions that the student is curious about. The student will also jot down notes about how this question would be useful in enhancing our overall understanding of snakes and why it would be

interesting to pursue this topic. I will then ask them to choose one question that they think is particularly thoughtful and has many opportunities for deep research.

Explain – The student will have independent time to research the question, using resources such as the library, the internet, and the live animal to find out more about the topic. I will also remind the student of previous inquiry methods that we have applied – for example, making use of a model, studying artifacts, making observations, watching videos, etc.

Elaborate – The student will then translate what they have researched into concrete methods and procedures that other students can use to explore the question.

Evaluate –

- a. summative – Students will write a final report that documents the question that they have posed and the suggested methods for researching the question.
- b. formative – Students will complete brainstorm of questions about snakes that they want to know more about.

### **Differentiation Plans:**

Behavioral for Student A

If a student is too active, I will provide clear benchmarks for him to meet at certain times throughout the day so that he has focused goals.

Cognitive for Student B

If a student has a hard time keeping up, I will pair him with a student who is at a higher level to help model the research procedure.

Cognitive for Student C

If a student is ahead, I will ask him to analyze what difficulties another student might have while carrying out his investigation procedure.

Affective for Student D

If a student doesn't want to participate because he has no interest in snakes, I will allow him to explore a topic that he finds more engaging.

### Language Demands for Students E, F, G

Beginner: Provide both English and native language resources for his independent research project. Allow student to complete his report by drawing pictures or creating visuals of his suggested procedure.

Intermediate: Provide ample ideas for student to choose from. Show him a model of a completed report to scaffold learning.

Advanced: Use logical steps and incorporate well-rounded approaches in his final report.