Lesson Plan

Think Like an Engineer

Book: *Beaver Dams*
Series: Animal Engineers
Level: Beacon

Objective

To help students practice using clues from a text to make inferences.

Supplies

- *Beaver Dams* book
- Think Like an Engineer worksheet (attached)

Before the Activity

Read Chapter 2 ("Building a Dam") of the *Beaver Dams* book, or assign it to students to read on their own. Divide students into groups of three or four. Print a Think Like an Engineer worksheet for each group.

Activity

A key part of engineering is finding the best way to build something. This includes choosing the right location and materials for a particular project. In this activity, students will practice thinking like engineers by examining how beavers build dams. Divide students into their groups and give each group a Think Like an Engineer worksheet. Students should work together to answer the questions on this worksheet. To do so, students will have to draw some of their own conclusions based on the ideas in Chapter 2 ("Building a Dam").

Evaluation

Using the attached answer key, give students in each group 1 point for each correct answer, for a total of 8 points.

Standards

This lesson may be used to address the Common Core State Standards' reading standards for informational texts, grade 4 (RI 4.1).

Think Like an Engineer

1. Page 9 says, "First, they find a low-lying spot where the water is not deep. They often choose streams with slow-flowing water." How might this kind of location make it easier for beavers to build a dam?

2. What problems might beavers face if they tried to build a dam in deep, fast-moving water?

3. Page 11 says, "A beaver can chew through a small tree in only three minutes. However, larger trees take more time." Why do you think this is?

4. Page 11 also says, "After the tree falls, the beaver floats or drags it to the dam." Would this step take more or less time for a larger tree? Why?

5. Page 12 says, "The beavers use rocks or stumps to anchor the dam." Why do you think beavers use these materials?

6. Would maple leaves be a good material to anchor a dam? Why or why not?

7. Page 13 says, "Lastly, they seal the dam using mud and plants." Why do you think beavers use these materials?

8. Would maple leaves be a good material to seal a dam? Why or why not?

Think Like an Engineer ANSWER KEY

1. Page 9 says, "First, they find a low-lying spot where the water is not deep. They often choose streams with slow-flowing water." How might this kind of location make it easier for beavers to build a dam?
Sample answer: Slow-moving water is less likely to wash parts of the dam away. Plus, if the water is shallow, the beavers do not have to pile up as much material to block the water.

2. What problems might beavers face if they tried to build a dam in deep, fast-moving water?
Sample answer: Beavers might have their dam washed away by the fast current. Or, it might take much longer to build a taller dam in deeper water.

3. Page 11 says, "A beaver can chew through a small tree in only three minutes. However, larger trees take more time." Why do you think this is?
Sample answer: Larger trees have bigger trunks, so the beaver has to chew through more wood before a larger tree will fall down.

4. Page 11 also says, "After the tree falls, the beaver floats or drags it to the dam." Would this step take more or less time for a larger tree? Why?
Sample answer: This step would probably take more time because a larger tree would be heavier.

5. Page 12 says, "The beavers use rocks or stumps to anchor the dam." Why do you think beavers use these materials?
Sample answer: Materials such as rocks or stumps tend to be big and heavy. As a result, they can hold the dam in place as water flows past it.

6. Would maple leaves be a good material to anchor a dam? Why or why not?
Sample answer: No, leaves are small and light, so they might wash away.

7. Page 13 says, "Lastly, they seal the dam using mud and plants." Why do you think beavers use these materials?
Sample answer: These materials tend to be soft and flexible. As a result, they can fill holes in the dam so water can't go through.

8. Would maple leaves be a good material to seal a dam? Why or why not?
Sample answer: Yes, leaves are parts of plants (one of the materials mentioned in the text), and they could be bunched together to plug holes.