Investigation Focus:
Students explore how animals alter the natural environment though reading a story about beavers and then building a model of a beaver dam.

Time Requirement: 45 minutes
Grade Level: K
Level of Inquiry: Guided
MA Standard Addressed
K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment.

Learning Outcomes
1. Students will be able to describe where beavers live.
2. Students will be able to explain that beavers build dams to create a pond.
3. Students will be able to discuss why beavers build dams and how this behavior affects the beaver’s habitat.

Materials:
For each group of 2-4 students:
2 sheets of green craft foam (8.5 x 11)
1 piece of blue craft foam (4 x 11)
1 piece of blue craft foam (4.5 x 5.5)
1 piece of brown craft foam (3 x 4)
Bottle of craft glue
Scissors
Pencil
3 inch picture of a beaver (optional)

Materials to build a dam such as:
Twigs/sticks
Popsicle sticks
Modeling Clay

Background Information:
(Source for background information: Think Like A Beaver, SMILE Program, Oregon State University.
Retrieved from https://smile.oregonstate.edu/sites/smile.oregonstate.edu/files/think_like_a_beaver_1.pdf)

One of the most notable traits of the beaver (aside from its large size!), is its ability to transform its environment to suit its needs. Most animals have at least some effect on the environment around them, but few animals (except for humans) have as much of an impact on their environment as the beaver does. In fact, a single family of beavers can in a matter of weeks turn a small, rushing stream into acres of deep, still, interconnected ponds, creating a complex wetland that would otherwise not exist.
Besides humans, beavers are the only species on earth that know how to construct dams. Scientists often refer to beavers as the engineers of the animal world. But unlike humans, who must be taught how to design and build dams, beavers know instinctively how to interweave sticks to create a strong and durable structure and how to seal a dam with mud to hold water. They are born knowing how without ever having done so.

There are many ways that beaver dams can have a positive impact on the ecosystem. Beaver dams create ponds that provide the beavers with refuge from predators. Additionally, since beavers store their food underwater in piles or “catches”, they have access to food throughout the winter. They also provide habitat that wouldn't otherwise exist for many other species. Ducks, geese, herons, turtles, and frogs are just a few of the species that benefit from the deep and wide waterways that beavers create. Beaver dams provide woody debris in which juvenile fish can hide from predators. Beaver dams help young trout and salmon survive their first vulnerable year. The accumulated detritus (leaf litter) in the water supports aquatic insect populations which are an important food for fish, amphibians, waterfowl, bats and songbirds.

**Getting at Prior Knowledge**

- To begin the lesson, ask students if they can think if any animals that change the places they live.
- Ask them how they think these animals change their environment.

**Engaging Activity**

Read these books about beavers with the students:

- *I'm Done* by Gretchen Brandenburg McLelilan
- *Frog and Beaver* by James Simon

**Guiding Question**

How do beavers change their environment?

**Investigation**

1. Divide students into groups of 2-4 students.
2. Provide each group with the equipment listed above.
3. Ask students to make a model of a beaver's habitat using the blue craft foam (for a river) and a green sheet of craft foam for a river bank.
4. Then ask them to make a second model showing how Little Beaver changed his habitat (Or Beaver depending on which book you read.) Tell them to use the rest of the materials on the table. (They can make a second model of a river and use the brown craft foam, twigs, popsicle sticks and clay to build a dam. They can then add a pond to the model.)
5. Once their models are complete, have students compare the 2 models and explain what happened when they added the dam.

**Wrap Up**

Discuss with students:

- How did building the dam change the environment?
- How does it help the beaver?
- Is the change the beaver creates (the forming of a pond) good or bad for the other animals living in the area?
- Do different animals come to live in the pond? Do some of the river animals leave?
- Do people change their environment? Does this affect any of the plants or animals living where the changes are made?
Extension Investigation
Help students draw pictures of other animals that change their environment.

Videos on Beavers
http://opb.pbslearningmedia.org/resource/tdc02.sci.life.colt.beaver/beavers/
https://www.youtube.com/watch?v=yJjaQExOPPY