Animal adaptations
3rd Grade

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Benchmarks & Objective:

- LS-2: Relate animal structures to their specific survival functions

Materials:

- Vegetable oil
- Soap
- Science journals
- Water
- Feathers of fur equivalent

Target Concept:

To introduce the concept of survival functions using characteristics of a Polar Bear's fur. The Polar Bear has an oil coating its fur, which helps to keep it dry and thus warm in the cold Artic waters.

Initial Introduction:

The lesson should begin with a discussion about animal adaptations. Ask the students to give examples of animals that have adapted to survive in their respective environments. If this is being done near the end of the period the students should be able to offer a number of examples. Next, give some introductory points about Polar Bears (e.g. where they live, what they eat, that their hair is oil-coated etc.). Finally, tell the students that today they'll be investigating how the Polar Bear can stay warm despite very cold temperatures in and out of the water.

Procedure:

Day One

1. Break the students up into groups of 4 or 5
2. Give each group a small sample of the vegetable oil and a small sample of water
3. Have them dip their finger into the oil then dip it into the water
4. Ask them to observe what happens to the water and write their observations in the journals
5. Ask them to dip a finger without oil on it into the water and have them observe and record their observations
6. Discuss the class's observations

7. Ask the students how their observations can explain why Polar Bears can live in such cold and wet environments without a towel and heavy clothes
8. Ask the students how we could test their theory (you're looking for the students to say that they could coat fur in oil, immerse it in water, and then shake off the water).
9. Test the above theory using feathers or some sort of fur substitute
    a. Coat the feathers in oil
    b. Dip the coated feathers into water
    c. Try to shake off the water
    d. Take a second feather and dip it directly into the water and then try to shake it off (this is the control)

This is a simple experiment, but it's used more to test the students' ability to develop a way to test their theories. This will be a helpful way to prepare for more detailed experiments in the future

Target Observations:

- Animals have to adapt to their environments in order to survive
- Polar Bears have oil coating their fur to help them stay dry and thus warm in the cold and wet Artic environment
- Scientists form theories and then come up with ways of testing their theories (this is called the scientific process)

Final Target Concept:

The students should have learned that animals (including humans) have to adapt to their environments in order to survive.