

How Things Affect the Environment

Alaska State Standards: Science - A14, A15, B1 **Grade Level:** 5th
English/Language Arts - A4
Cultural Standards - B3, E2

Science Concept: Trails and other human activities affect the habitat and ecosystem in and around the Mendenhall River.

Scientific terms: erosion, environment, habitat, evidence, affect, inference.

Materials: clipboards, paper, pencils, writing journals.

Gear-Up: Show the class slides and/or pictures of rivers with wildlife in them. Discuss what they notice, how they think life around that area survive, and what types of effects those creatures and plants have on their surroundings. Now show a picture of a river with a trail next to it, some pictures of other human interaction (boating, chopping, etc). Discuss what the types of effects are that are caused by people in those habitats. Compare the two and ask if they see any differences?

Process Skills: Observation, communication, inferring.

Explore: Go outside to the Mendenhall river and walk the trail. Take with them a clipboard, paper and pencils to jot down anything they see that is evidence of human activity that has affected the area.

Process Skills: Observation, inferring, recording data, possibly classifying.

Generalize: Discuss with the class what types of signs they observed. What do you see? What signs of life can you see? Which signs are created by wildlife? Which ones are signs of human activity? Really dig and guide them toward seeing the difference between the two. Talk about how they saw those signs and what affects they think came or may come from those different pieces of evidence. Re-emphasis what we are doing when we infer and how inferring is helpful for scientists. Remind them about the slides we watched in class and how the area changed on those. Make predictions on what the area will look like in one year, five years, ten years, fifty years.

Process Skills: Questioning, communicating, predicting.

Explore: Take them off of the trail and explore in the wooded area. Look for signs of human activity and write them down. They also are to write down what types of affects will come or have come from human interaction off of the trail.

Process Skills: Observation, recording data, possibly classifying.

Generalize: Return to the class and quickly discuss what we found off of the trail. What signs of human life were there? What signs of wildlife were there? Was there a difference between the trail and off of the trail? Answer any questions and clarify any confusion about any of the findings. Quickly have them share other findings in pairs.

Process Skills: Communication, questioning, inferring.

Apply/Assess: Have them write in their journals for 5-10 minutes on three things: what they found on and off of the trail, what the affects were, which area was mostly affected and why. Then have them get into groups and chart and graph the results of the different areas, and compare the differences. Each group then makes inferences from the graphs on what they think will happen over time. And finally, how could they use this information to inform the public about their findings as well as why they think this would be important.

Extensions: Why would we need this data? What kinds of decisions could people make based on the data collected? Would everyone agree? Create a venn diagram with your some of your information. Draw a picture of the area we observed and another picture of what you think it will look like in 50 years.

Scoring Guide

Be able to answer the following questions in the science journal:

- What was found on the trail?
- What was found off of the trail?
(explain different things they found that were evidence of human and/or animal activity in the area.)
- Which area was affected most?
- Why?
(They should have come to the conclusion that on the trail is affected the most due to human and animal interaction verses almost only animal activity off of the trail.)

Be able to represent data collected in their science journals by creating a graph or chart as a small group.

(They should be able to show that off of the trail is significantly less affected than on the trail.)

Be able to take this information and come up with an appropriate way to inform the public or agencies, as a group, and be able to share this with the class in a presentation.

Student Scoring Guide

- What was found on the trail?
 - 1 (inadequate) Named zero or four things
 - 3 (adequate) Identified five to ten things
 - 5 (adequate plus) Identified eleven or more things
- What was found off of the trail?
 - 1 (inadequate) Named zero or four things
 - 3 (adequate) Identified five to ten things
 - 5 (adequate plus) Identified eleven or more things
- Which area was affected most?
 - 1 (inadequate) Did not write anything
 - 3 (adequate) Explained which area was affected most and supported it with a piece of evidence from the trail lists.
 - 5 (adequate plus) Explained which area was affected most and supported it with more than one piece of evidence from the trail lists.
- Represent the data collected by creating a graph or chart as a small group.
 - 1 (inadequate) A graph/chart that does not represent data collected
 - 3 (adequate) A graph/chart that displays at least half of the data collected
 - 5 (adequate plus) A graph/chart which represents all members of the group, using more than half of the data collected
- As a group, come up with an effective way to inform the public/agencies
 - 1 (inadequate) Unable to work as a group or come up with a solution
 - 3 (adequate) Come up with an idea that the entire group agrees on
 - 5 (adequate plus) Able to convince the class that their idea is effective
- Share this with the class in a presentation.
 - 1 (inadequate) The work load is not evenly distributed
 - 3 (adequate) Every student takes an active part in presenting
 - 5 (adequate plus) The group meets adequate and has poster, handouts, or some type of visual representation