

BUFFALO GONE: APPRECIATING NATURAL RESOURCES

Ken Marland, Saskatchewan

INTENDED GRADE/SUBJECT AREA

Grades 3 and up History, Math, Geography, Social Studies, Environmental Science

CONCEPTS

- Human adaptation to the natural environment, numeration, problem-solving.

INSTRUCTIONAL OUTCOMES

Students will:

- demonstrate numeracy skills, including the ability to use appropriate symbols and systems;
- identify similarities and differences found in First Nations and European-Canadian cultures in the past and the present;
- describe the relationship between people of different types of societies and the natural environment throughout history.

RECOMMENDED TIME FRAME

Students can complete this lesson in a single block of time through the integration of subjects over the course of one day. It can also be taught in five 40-minute lessons.

BACKGROUND INFORMATION

This lesson is one example taken from a unit on the Plains Bison and First Nations People. As part of this unit, the students observed bison in their natural setting, built a life-sized sculpture of a bison, and researched and recreated artifacts and activities related to the hunt. Students also prepared and presented a 45-minute drama at the Children's Festival using masks, hides and other props. The drama explained the habits of the bison, the relationship between the bison and First Nations people, and the arrival of the Europeans.

Part of understanding the bison is knowing that millions of them once lived on the prairies. Most people have difficulty conceptualizing large numbers. The students learned that over 60,000,000 bison once roamed the great plains of North America. They also learned that by the late 1800s, there were only 18-35 animals left. The students could recite this information but they could not comprehend such an enormous loss.

ACTIVITIES

Activity 1 —

I filled a clear, plastic, one-litre container with dried navy beans. Each student estimated the number of beans in the container and wrote down their estimation. I then divided the beans onto styrofoam meat trays and gave one tray to each student. The students counted the beans on their tray and wrote their tally on the chalkboard.

When all the tallies were on the board, we discussed the different ways students had counted them. For example, some students made piles of ten, whereas others had counted by ones, twos or fives. Using calculators, the students added up the tallies.

We then calculated the volume of a large cardboard box. Once we knew how many litres the box could hold, we calculated how many beans it would take to fill the box. (A box with a volume of 10 litres would hold 10 times the number of beans in one litre.)

The next task for the students was to calculate how many boxes they would need to hold 60,000,000 beans. Students used a variety of problem-solving strategies. Finally, we compared the number of boxes we needed to the space available in the classroom.

At the conclusion of these mathematics activities, I showed the students a handful of beans and explained that these beans represented all that was left of the bison approximately 10 years after the arrival of the Europeans.

Activity 2 —

The next step was to imagine how the First Nations people must have been affected by this sudden loss. I brought in 25 empty, one-litre containers of milk to the classroom. I had the students imagine that there were only 25 litres of milk left in the city. Milk is a very important food to children. We discussed various issues related to going out in search of the remaining milk. We discussed various issues such as:

- Where would we look for the milk?
- How much time would be required to find this milk compared to the amount of time we usually spent getting milk?
- What activities would we give up in order to search for milk?
- How many other people would also be looking for this milk?
- What are the chances of finding the milk and what are the consequences of not finding any milk?

As part of this discussion, groups of students role-played a few people purchasing milk in our current situation of plenty. We then contrasted it with the same people would react in a shortage.

Activity 3 —

The lesson concluded by comparing how the extermination of the bison affected Native families and how the collapse of the cod fisheries has affected Maritime families. These activities enabled the students to look beyond statistics and reflect upon the consequences of such loss for real people. We also made predictions about which natural resources were currently being over-harvested and which ones would likely lead to economic hardship in the future. My students selected forestry and predicted that the families of lumberjacks would experience similar consequences.

MATERIALS/RESOURCES

- clear plastic one-litre container
- dried navy beans

- class set of styrofoam meat trays
- class set of calculators
- large cardboard box
- metre sticks for calculating volume
- 20-30 empty one-litre milk cartons
- newspaper clippings and electronic media resources on the effects of the codfish moratorium.

About the Educator

Ken Marland's grade 2 students are often found outside of the classroom, in the community exploring its resources. Throughout his career, Ken has attempted to create experiences for students of all grades that pass along his own love of history.

He developed a miniature stamp album of Saskatoon to assist children in learning about their local history. Another project, *The Bison: A Journal of Discovery*, was developed for a grade 4 class at an inner-city school. Students study the plains bison and its relationship to the Native people and the first Europeans on the prairies. The unit culminates in a dramatic retelling of the history performed by his students.

Inspired by a conference trip to St. John's, Ken created *Signal Hill: A community study of St. John's Newfoundland*, designed to explore the maritime community. It begins with the purchase and dissection of squid, and continues with the construction of 3D models of lighthouses and the city of St. John's. At the request of the University of Saskatoon, Ken published a monograph titled *The Affective Dimension of Concept Development*, in which he describes how to teach Social Studies from a problem-solving perspective.