GRADE 5
UNIT : Math - Data Management; Social Studies - Heritage (Canada's First Peoples)
THEME: Human Face of Mathematics - Mathematics in Aboriginal Culture

EQUIPMENT
- atlatl and dart of various lengths (For example 0.5m, 1 m, 1.5 m, 2 m)
- pylon (or other easily seen target that cannot damage or be damaged by the dart)
- measuring tape
- coloured tape
- stop watch
- distance chart
- accuracy chart
- calculator

Math - Data Management

D-6 Display data using
  6. bar graphs
  7. timelines and timetables
  8. line graphs (broken)
  9. histograms
D-7 Discuss and determine the most suitable method(s) to display data

LEARNING OUTCOMES:

Math - Data Management

D-1 Acquire data through
  3. measuring
  4. simple experiments
D-2 Recognize that the data collected are affected by
  1. the nature of the sample
  2. the method of collection
  3. the sample size
D-3 Discuss factors that may distort the results of data collected (e.g., gender, ethnic, socioeconomic)
D-8 Discuss, interpret, and ascribe meaning to the organized data by
  2. questioning
  3. conjecturing
  4. seeing relationships
  5. reviewing before concluding
  6. building theories
  7. finding averages
D-9 Solve problems involving data management
D-10 Understand the concepts of probability (chance) by
  2. predicting
  3. identifying events

Social Studies - Heritage (Canada's First Peoples)

Knowledge Objectives
Students will know that:
- First Nations peoples have been living in what is now called Canada for tens of thousands of years.
- First Nations peoples developed technologies to meet their needs.
- there is great diversity among First Nations peoples

Teacher Set Up
1. Using the coloured tape, mark off a circle with a diameter of 2 m and a throw line about 10 m from the perimeter of the circle. Place the pylon in the centre of the circle
2. Divide the class into groups of no less than 4. For each group you will need one student to throw the dart, one student to measure the distance thrown, one student to time the flight of the dart and another to record the data. One student from each group will throw the dart for the sake of consistency.
3. Give each student a distance, time and accuracy chart.

Culminating Activity

Student Instructions
Background Information
1. Research pre-contact and post-contact technology for a Canadian First Nation group. As a class, create a timeline of Canadian First Nations' technology using the approximate time period it was used or invented.
2. Discuss the similarities and differences in the atlatl and dart from region to region. Demonstrate the atlatl and dart then give the students an opportunity to try it.

Hypotheses
3. After your teacher demonstrates how to use the atlatl, create a hypotheses on which length of dart will be able to travel the farthest, be the most accurate and will travel the fastest.

Maximum Distance & Speed & Accuracy
4. Using the stop watch time the dart from the time it leaves the atlatl until it lands on the ground.
5. Throw each dart about 5 times each as far as possible, not crossing the line.
6. Measure each throw from the line to see how far the dart traveled.
7. Record the distance and time traveled for each length.
8. Keep a running tally of how many times it lands within the target circle for each length.

Data Analysis
1. Calculate the speed for each throw
2. Determine which length of dart traveled the farthest, which was the most accurate and which travels the fastest.
3. Compare results to hypotheses.

4. Represent data graphically by choosing an appropriate graph type
5. Determine which dart length had the best combination of distance and accuracy.
6. Justify answers and the type of graph used.
7. List the advantages and disadvantages of the atlatl comparing them to the technology previously researched.

Closure
As a class
1. Discuss factors that may have distorted the results of the data collection.
2. Consider how the nature of the sample, method of collection and sample size could be refined to find more precise results.