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
- pylon (or other easily seen target that cannot damage or be damaged by the dart)
- measuring tape
- coloured tape
- distance chart
- stop watch
- 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

<u>**Social Studies - Heritage (Canada's First Peoples)**</u>

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 throw line. Make sure there is ample space for students to throw the dart.
2. About 10 metres from the throw line, place a pylon so the students have something to aim at. you may have to adjust target placement depending on your students.

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.

Maximum Distance & Speed
3. Decide on 3 or 4 students from the class to throw. Record the distance and time traveled for each length.
4. From the line, each person throws the dart 5 times without using the atlatl, aiming at the pylon.
5. Measure each throw from the line to see how far the dart traveled.
6. Record the distance and time the dart traveled for each person.
7. Repeat steps 4-6 with the atlatl.

Data Analysis
1. Calculate the speed for each throw
2. Determine which the maximum distance with and without the atlatl for each thrower.
3. Determine the maximum speed ($v=d/t$) for each thrower
4. Compare the results with and without atlatl graphically by choosing the appropriate graph type
5. Determine whether the dart went farther and faster with or without the use of the atlatl. Think of some ideas why.
6. 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.