Knots: Tying and Experimenting

Lesson Plan
Teacher:
Subject: Science, Math, Art
Grade Levels: 4th-12th

Activities

1. Tying Knots: Students will learn how to tie four different knots over the duration of Fish Camp. Every one will learn how to tie the Bowline Knot (some may know it). The Bowline is considered the King of Knots. See the reference Activity-1 Page below.

2. Discussion: What knots are useful to know for use around Fish Camp? Students can learn three other knots by referring to a classroom chart and teaching one another.

3. Experiment: Test individual knot tying ability and strength: Make and tie knots around a variety of objects that differ in weight. (e.g. Empty buckets, buckets filled partially with water, etc.) Make guesses and record results on board.

4. Make A Fish Camp (Survival) Bracelet: Students will make a Fish Camp Bracelet (survival bracelet) which is a series of knots made with a 6' length of parachute cord. The bracelet is undone with a simple pull and is ready to use. There are more elaborate bracelets that can be made by students who want the challenge but the principle is the same.

5. Brainstorm: Together, think of the possible uses of the Fish Camp Bracelet:
   Given a 6 ft. length of cord,
   - What can it measure? For example, fold cord in half and you can measure 3 ft.
   - Would 2-3 bracelet cords tied together and then tied to two poles be strong enough to hang fish on to dry? What would need to be considered?
   - Can you line a canoe with 5 tied together?
   - How many would it take to tie off a boat in a pinch? Would you trust the knots? Your knot tying abilities? Your classmates' abilities to tie knots?

6. Classifying Knots: Teacher will put the names of knots on 1/2 sheets of paper, fold them and put them in a box. Each student picks a knot from the basket, learns its purpose and writes a multiple-choice question on the back of paper (three choices of knot's purpose) Then, the teacher puts these back into the box. Conclusion: Have a student select one, read the name of a knot with the multiple choice questions. Other students guess at the most likely purpose of for the knot.
Curriculum Materials
A Chart of Knot Tying that includes the bowline knot to hang up in the classroom for reference. Each student will need 6 feet of parachute chord to practice tying four knots. Variety of objects are required to tie knots around testing the strength of knot. To make the survival brace-let, students will need 6 ft. of 550 parachute cord or whatever is available, scissors. The teacher will need a lighter to melt the ends of each cord.

Instructions to make a Survival Bracelet can be downloaded at http://www.instructables.com/id/Survival-Bracelet/?ALLSTEPS

Look for one of many websites that demonstrate the making of a survival bracelet.

Assessment and Evaluation
Students’ knot identification and purpose of knots will be assessed with a Multiple Choice oral quiz designed by students; completion of Fish Camp Bracelet; progress with tying Bowline Knot will be assessed by teacher.

Curriculum Goals For Tying Knots

Math. B.1. Students will use computational methods and appropriate technology as problem solving tools.
M.B.2. Students will use problem solving to investigate and understand mathematical content;
M.B.6. Students will apply what was learned to new situations.

Science.A. Students should understand and be able to apply the processes and applications of scientific inquiry .

Science.B. Students should understand and be able to apply...principles and facts that explain the physical world.

English.D. Students will think logically and reflectively in order to present and explain positions based on relevant and reliable information.

Art.A.1. Students will participate in visual arts.
Arts.C.1. Students will know the criteria used to evaluate the arts; these will include craftsmanship, organization, originality, technique, and theme.
The Bowline Knot