

Introduction to the Scientific Method

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Objectives:

The main objective of this lesson is to get the students involved in a class activity while introducing the process of the scientific method.

This lesson may be used on any grade level. It may be used as just a problem solving situation or as a beginning class activity.

Materials Needed:

String - One piece per person (about 3 feet long)

Strategy:

1. Divide students into groups of two.
2. Each student should tie the ends of their string into loops (big enough to put their hands into loops but small enough that the string will not be continuously falling off).
3. One person from the pair should place the string onto his/her wrists such that it resembles handcuffs with about two feet of string in between each of their hands.
4. The other member of the pair is to place one loop around one hand only. They are to then take the string and place it between their partners' body and their connected hands. The student should then attach the other end of their string around their other wrist (see diagram 1).
5. The students should now be connected such that they must devise a plan to separate themselves from each other without removing the string from around their wrists.
6. You should then have the students write out their ideas on what they believe would be the best way to solve this problem using the first two steps of the scientific method. (State the Problem and Form a Hypothesis)
7. Now using the third step (Testing the Hypothesis) the students are to try to untangle themselves by the methods they devised when forming their hypothesis.
8. After giving the students ample time to try to test their hypothesis they are to finish their scientific method by either accepting or rejecting their hypothesis and forming a conclusion.

Performance Assessment:

As stated above the students are to write out for themselves how they are going to solve the problem using the scientific method. Another problem may also be given to the student such that they are to try to solve the new problem using the method they just learned.

Conclusions:

It may be nice if you are able to show the students how to get separated from one another since most of them will be unable to do so. The main trick is that you do not need to move yourself around at all which most of the students will find themselves doing (suggestion: tell the girls in the class that are wearing skirts or dresses that they will be unable to do the lab - this leads the students to believe that they have to manipulate their bodies in many different directions). All that needs to be done is for one of the students to rotate their hands such that the string is perpendicular to their partners. They are to take the half of the string which is in the upper half and note which hand it is closer to on their own body. They are to take that half and loop it through their partners wrist loop on the opposite hand of their partner (if the string was closest to their own left they are to go through their partners' right). The loop should be pulled through the wrist loop in the direction of the person's fingertips. Once the loop is pulled through the wrist loop it is to be pulled over their partner's hand. The student should then be able to extract themselves from their partner by moving the string off to the side (see diagram 2 on the next page). If you try to do this and have any problems in solving it, feel free to call me.

In the following diagrams assume that you are person 1 and that you are standing with your hands up, palms facing you.

Diagram 1

The following diagram shows the initial positions of the two students and their ropes:

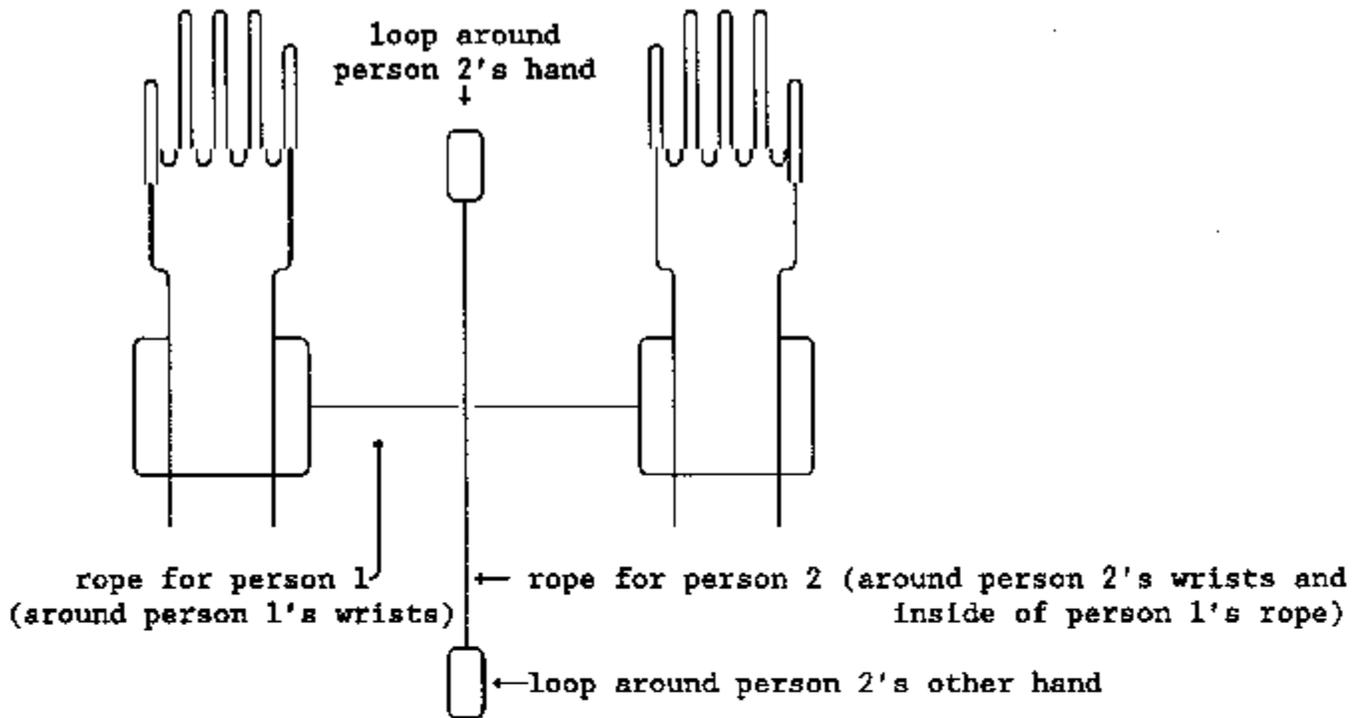
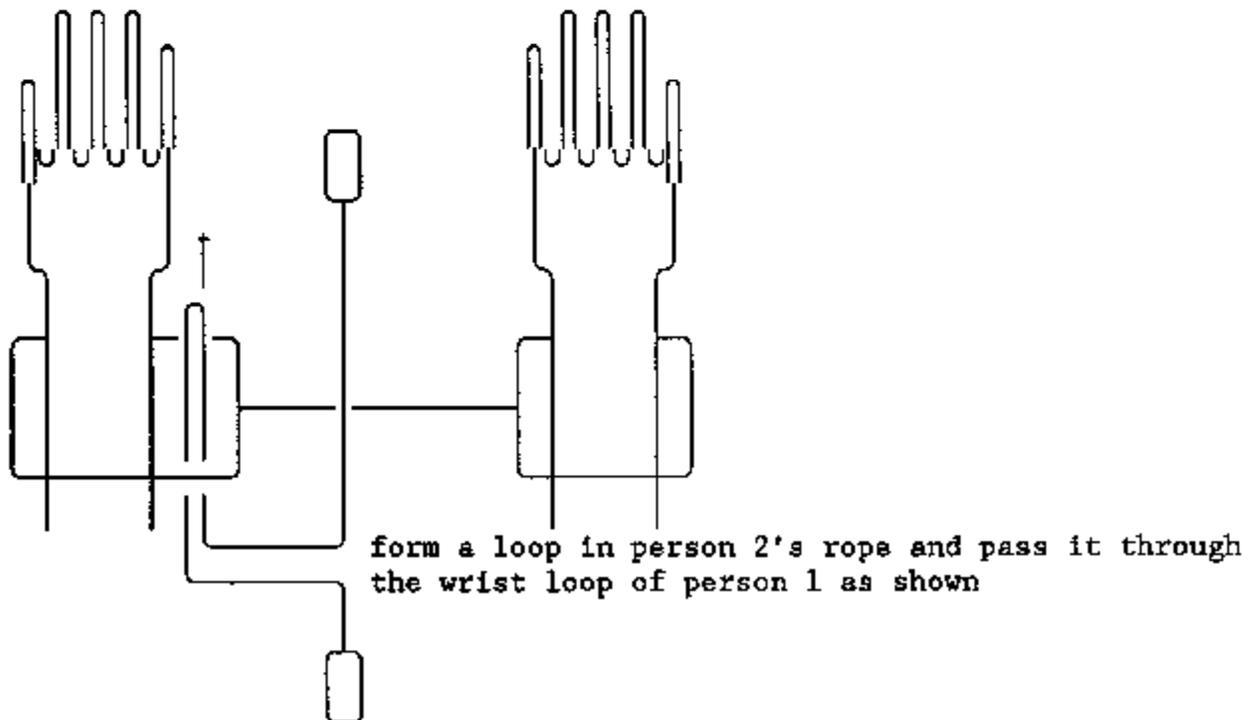


Diagram 2

To 'untangle' themselves, form a loop in the rope from person 2 and pass it through person 1's wrist loop as shown below:



Finally, pass the loop from person 2's string over the hand of person 1.