The Human Knot

The *human knot game* is a popular game to use as an ice breaker or to plat at parties at parties. In this game, a group of people join hands in a way that creates a human knot and then they try to untangle themselves, without breaking the knot. It also has is very interesting mathematically, so you will play it today in order to get to know some of your classmates and to start thinking about mathematics. There are several different ways to play this game and we will use one that has a bit of structure to it.

With the people at your table and people from a neighboring table, form circle with five or more people. We will create a knot as follows:

I. If your group has an even number of people, each person should grasp the right hand of a person not their neighbor.
   If your group has an odd number of people, everyone except for one should grasp the right hand of a person who is not their neighbor. The remaining person should use their right hand to grasp the left hand of another person. This step is illustrated in Figure 1

FIGURE 1. Setting up the human knot

II. Now everybody else should grasp the left hand of another person different from the person whose right hand they grasped.
III. Now try to untangle the resulting knot without letting go of either of the hands you are holding.This step is illustrated in 2

FIGURE 2. Untangling the human knot

1. How successful was your group at being able to untangle your knot? Explain.
2. How did your group decide whether or not you had untangled your knot?
3. Did you have discussions about what it meant to untangle your knot? If so, how, and what, did you decide untangled meant? Did your notion of what untangled meant change as you worked on this activity?
4. What strategies did you use to try and untangle your knot? What difficulties did you encounter and how did you deal with them?
5. If you decided you were not able to untangle your knot, what made you decide you would not be able to do so? Are you sure are your group could never untangle your knot? Why or why not?