Objective/Purpose: This activity helps kids understand the abstract concepts of rotation and revolution and uses role-playing to demonstrate how the planets rotate around the Sun.

QCC’s: 4-Activities/Tools, 20-Space:Astronomy

Materials/Time Required:
- 10 balloons, preferably assorted colors, with one yellow balloon larger than the others
- sidewalk chalk
- one class period, preferably in nice weather

Background Information: I found this lesson plan idea on a website called “An Educator’s Reference Desk” and loved it. Children really like learning about space and the planets but because it is such an abstract idea, it is really helpful for them to see rotation and revolution in action. The day before, we read “The Magic School Bus gets Lost in the Solar System” and talked about the order of the planets.

Preparation: I blew up all of the balloons beforehand, and made them all medium-sized except for the Sun, which I blew up all the way. I had checked with the teacher beforehand if there was a good area outside where we would be able to do our demonstration because it takes up too much room to do this in a classroom.

Safety Issues: When going outside, remind the kids to be careful of cars, or bees, or any other potential outdoor problem. Also, when you start doing revolutions around the orbits, warn the kids to do them slowly to avoid getting dizzy.

Activity Outline/Teacher Procedures: Begin by reviewing the order of the planets. A good way to remember them in order is the saying, “My very excellent mother just served us nine pizzas.” The first letter of each word corresponds to the first letter of the planets in order from closest to the Sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto. Take the students outside and find a space on concrete where you will be able to mark things on the ground using the sidewalk chalk. Start by asking for a volunteer for the Sun, and give this child the large yellow balloon and draw an X on the ground for them to stand on. Continue to recruit volunteers to be the planets, starting with the closest to the Sun and moving outwards. Explain that the planets follow an orbit around the sun and we are going to draw the orbit so they can follow it. With the first two students, help them to draw an orbit circle around the Sun and have each following student draw bigger and bigger orbit circles around the Sun, leaving a few feet between the circles so at the end you will have nine concentric circles around the Sun and a student with a balloon standing on each circle. Have the children follow the orbits around the sun and explain that one full time is a revolution, and when the Earth revolves
around the Sun one time, that is a year. Have the children do this a few times and then introduce the idea of rotation, so they can spin in circles as they follow the orbit line and explain to them that when they are facing the sun it is daytime and when they are facing away it is nighttime, so one full rotation is one day. Remember to switch places so the Sun and other students get a turn to try everything.

Possible Questions:
1. What is an orbit?
2. How long does it take for the Earth to make one rotation?
3. How long does it take for the Earth to make one revolution around the Sun?
4. Does it take longer or shorter for the furthest planets, like Pluto, to revolve around the Sun? Would their year be longer or shorter than ours?

Assessment/Evaluation: Ask the students questions to see if they understand the concepts covered in this lab. Also, participation is important in order for the whole solar system to work together so you could evaluate based on participation.