**Electricity Role Play**

**I. The Jelly Bean Role Play**

Many teachers like using the Jelly Bean Role Play as an approach to teaching about electric circuits. In the role play, two students are assigned the roles of ‘battery’ and ‘light globe’. The ‘battery’ is given a bag of jelly beans which represent ‘energy’. The ‘battery’ and the ‘light globe’ stand about 3 or 4 metres apart. About 10 more students act as ‘moveable charged particles’, and are asked to form a complete ‘circuit’ between the ‘battery’ and the ‘light globe’. After a direction for the ‘current’ has been agreed upon, the ‘moveable charged particles’ start to move around the ‘circuit’. As they pass the ‘battery’, the ‘moveable charged particles’ are handed two jellybeans which they then give to the ‘light globe’ as they pass it. The ‘light globe’ eats the jelly beans and then does something (e.g. waves his/her arms) to represent the action of a real light globe producing heat and light. The role play is intended to show that that in an electric circuit containing a single battery and light globe, the battery supplies a constant amount of energy per charged particle and that this energy is transferred to the light globe where it appears as heat and light.

* [*http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/science/continuum/pages/jellybean.aspx*](http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/science/continuum/pages/jellybean.aspx)

II. The Electric Shuffle

Try this role-playing activity with your 4th grade Electric Circuits students. The research on brain compatible learning suggests that role playing is a great way to establish a deeper understanding of difficult concepts. To do this activity, you'll need a bag of pretzels and a space large enough to have your students walk around in a complete "circuit".

***“The Electric Shuffle”***

Have you ever felt really exhausted at the end of a very strenuous period of activity – like after a long practice of basketball or soccer? Your muscles are really tired because you’ve “burned” a lot of energy in them. Or how about how the weak feeling you get if you’ve gone too long between meals? When you get this tired feeling, you need to “re-charge your batteries”, so to speak, with the energy you get from eating food. Electric circuits are like that in a way. As electric charge moves around in a circuit, it picks up energy at the battery (like you eating food) and loses or “drops” its energy at devices like light bulbs or appliances (like you using that energy to play hard.) Notice that in this process, only the energy gets used up, not you or your muscles. In an electric circuit, the electric charge doesn’t get used up either – only its energy.

In this activity, you will create a model of an electric circuit by playing the roles of the battery, the electric charge, and the load (light bulb). The model is not a perfect model – few seldom are – but it will give you a better idea of what is happening in an electric circuit, as energy is passed from the battery to the electric charges to the light bulb.

Select one student to role-play the part of the battery. Give this student plenty of energy (a bag of pretzels – food is the source of energy for your body and gets used up as you play.). Choose a second student to play the part of the light bulb – this must be a person who likes to be very energized. Everyone else will play the parts of the electric charges in the circuit.

Form a large circle of the electric charges with the left hand of each charge on the left shoulder of the charge in front of him. (You should be facing the back of the charge in front of you.)

Have the battery stand at one end of the circle ready to give out his energy (a pretzel to each charge). Have the light bulb stand at the opposite side of the circle ready to receive and be energized by the charges as they come past (takes the pretzel).

The teacher will act as the switch and tell you when to begin.

On a signal from the teacher (closing the switch), the charges will begin moving in a counter-clockwise circle. When a charge passes by the battery, it will pick up a bit of energy (a pretzel). The energy each charge has received is called its “voltage”. When the energized charge passes by the light bulb, it gives its energy to the light bulb (give the light bulb the pretzel), and the light bulb needs to show that it has become energized by getting “excited” (a little dance will do). The electric charge has just “dropped” its energy at the light bulb – sometimes called a “voltage drop” – and now must continue on its path back to the battery to pick up more energy, and repeat the cycle. Notice that only the energy gets used up. The charges continue on their path through the circuit.

Try doing this activity for different kinds of circuits; for instance, if two equal light bulbs were connected in series, each charge would have to break up its energy (pretzel) into two equal parts and give half of its energy to each bulb.

What would happen if your circuit had three equal light bulbs connected in parallel? (At each junction, only one- third of the charges would be able to proceed through that light bulb. The remaining charges would need to continue down the free pathway to the next junction.)