

## SCIENCE CUP – ROJKO 2016

### 1st category – Kindergarten- 2<sup>nd</sup> round

#### Creativity

After a class discussion as to what a logo is, the students liked the idea of continuing with the theme of team work and class mates. It was decided to make paper dolls holding hands to demonstrate working together.

The next day a student came in and explained that logos should be smaller and more like a drawing rather than a craft (something I had said many times the day before!) This time we decided to give each student a piece of paper to design a logo and to then vote as a class for the best design.



The winning logo was chosen because of what it resembles. The colors represent different students and the semi circles are similar to the helping hands theme within our mascot.

#### Theory and research

We had a class discussion about various ways of communication. Students listed phones, text messages, letters and news! I told them the next step was to find a way to communicate without the devices we usually use and they suggested shouting!

I introduced the spoon and string experiment and told the students we want to learn about how sound travels. Students chose their spoons and their string and tied the knot themselves.





They each had turns to tap on the spoon while just holding the string and then again with their fingers pressed to their ear. I asked the students if there was any difference in the different ways we tried and recorded the results.

All the students were amazed at the increase in volume and clarity. The students thought that the harder they hit the spoon, the louder the sound, but were surprised to not notice a big difference.

After the experiment we discussed the concept of sound waves and that some things help pass the sound waves and some don't. The wool was allowing the sound to travel through it and the reason for the sound being cleaner when our fingers were to our ear was because our fingers too, were acting as a conductor. The students were very intrigued that only the student holding the wool was able to hear the clear sound, but they easily made the connection with it having to do with passing of sound.

### **Practice and project**

The students were shown pictures of old telephones that were connected with wires, and asked if anyone remembered them. Only one student recognized it and said she has seen it in her grandmother's house!

The students had fun talking to their friends while holding their throats in order to 'feel' the sounds they were making.



For the third part of this month's contest, we collected 6 paper cups and 3 different pieces of string (thick wool, thin wool and ribbon). From each piece of string we collected 3 different lengths. The students all helped in making the paper cup phones, and excitedly went to a quiet area to start the fun.

Students were put in pairs and each pair was given a 'phone'. They walked slowly apart until the wool/ribbon linking the cups was straight and tight. The pairs took turns to either speak or listen. The same pairs then tried it again after taking a few steps closer to each other. All students had a turn with the 3 separate 'phones'. We sat down to discuss if there was any difference. The students were very surprised that even though they were standing closer to each other, the sound was not as clear. This observation helped them in understanding that it was not about the distance, rather the connecting strings.



We tested out a few theories and here are our observations.

- The length of the string does not dramatically affect the sound, but the sound is slightly higher when the distance is shorter.
- The sound is clearest when standing as far apart as the string allows.
- In a 3 way call (one cup, 2 strings) the sound is just as clear.
- The sound gets effected if someone pinches the thread while someone is talking.
- The thinnest string transmitted the clearest sound.