Time Travelers Summer Camp

The dream of traveling through time requires a bit of familiarity with physics, and that's why I felt the Time Travelers Summer Camp this year, was the perfect opportunity to introduce young students to the subject. For this year's second S.T.E.A.M (Science, Technology, Engineering, Art, Mathematics) summer camp, I taught four days and the focus was to constantly remind the students that physics is all about asking and investigating 'how' the world around us works. My goal was for these kids to go back to school this fall asking 'how' about the physics of everything in sight.

The objective of the week was to have the group of students build a time machine. This task with constraints and requirements taught many skills that are crucial for engineers, scientists and technologist to have in order to work together successfully. Everyone on the team agreed upon a blueprint design which included dimensions and specifications. The group was then divided up into the exterior team, the interior team and the group liaison that ensured each were on the same page. The hot glue guns, a box of donated old electronics, and the huge pile of cardboard boxes became a hot commodity. The machines were wrapped in caution tape and covered in creative buttons and signs. One sign that particularly caught my attention, was the one a young girl made that said 'I Love Physics'.

Throughout the week we studied the spectrum of light, which includes gamma rays, x-rays, UV light, visible light (indigo, blue, green, yellow, orange and red) infrared light, microwaves, and radio waves. I showed the students pictures, videos and real-life examples of these types of light in order to ensure they understood what each was. I then required that the teams designed an instrument for their time machine that was able to detect at least 3 types of light. The students came up with creative looking antennas and analyzers that could detect the frequencies we studied. I also required that the time machine had at least one instrument that used a lens. We studied the difference between the two different types of lenses, concave and convex, and I was pleasantly surprised how creatively the teams incorporated models of telescopes, microscopes, night vision goggles and too many cameras to count.

We also studied spacetime. I introduced the students to Newton, how he came to identify the concept of gravity, and how this significant event led Einstein to the insight that gravity warps space and time. To help the students further conceptualize time, I showed them videos of slow motion and time lapses. To help them further visualize how much space there really is out there, I showed them videos zooming into microchips and zooming out of the earth, far past our Milky Way. They began to appreciate why traveling at the speed of light is not only impressive, but crucial if we want to get anywhere. This led them to designing a model of a mechanism at the front of their machine that could break up the molecules of spacetime and therefore break the barrier of light.

Although our machine didn't fly at the end of the week, I do believe the students had a proper introduction to how powerful physics, the art of asking 'how', is. The more you 'play' with a concept in your mind, the deeper the teaching is carved into your neural network, just like water carves the rock of a canyon through time. See, I was seventeen when I was first introduced to physics and that wasn't soon enough. I can only hope this year's summer camp group will be better able to conceptualize the concepts in their high school and college physics classes because of the exposure brought to them this summer by artsPlace and Innovate Canmore.

Till next time,

-Abra O'Leary
Innovate Canmore Ambassador Program Coordinator