Circle of Pong – ePrep Summary

Ten ePrep students arrived today at Benedictine and were given the following introduction:

The United States and its territories encompasses 169 geologically active volcanoes that are monitored by the United States Geological Survey (USGS). In order to prevent loss of life and property, the USGS issues volcano warnings which requires real-time monitoring of volcanoes, their seismology, and gas, thermal, and surface deformation measurements. What challenges do scientists have to overcome in order to monitor volcanoes? What tools do you think scientists use in order to overcome these challenges?
Imagine if you had to deposit a small piece of equipment to the center of a lava flow. How would you do it? What science concepts would you use to help you achieve your mission?

Student Outcomes and Engineering Connections:

1. Students will be able to design and build a device that delivers a ping pong ball to a cup.
2. Students will be able to explain design considerations based on concepts of potential and kinetic energy, and forces.
3. Students will be able to utilize the three step design process to meet an engineering challenge.

The Challenge:

Devise a way to deposit a ping-pong ball into a paper cup that is located in the middle of a 6-foot diameter circle.

Materials per team of 2-3 Engineers

- 5 cm of Tape
- 30 cm of 3-ply String
- 4 Rubber Bands
- 1 Dixie Paper Cup
- 1 Sheet of Copy Paper
- 2 Paperclips
- Brown Paper Lunch Bag (3” x 6-7”)

The Constraints:

- Every person in the team must be actively involved in the placement of the ball.
- The ping pong ball must start outside the circle and must come to rest inside the paper cup in the center of the circle.
- Students may not touch the ping pong ball or reach into the 6-foot circle.
- No part of anyone’s body may extend into the imaginary cylinder that extends above the circle.

• Only the provided materials may be used.

Testing: The students were given the opportunity to iterate their designs freely. Eventually, all teams built a device that could deliver the ball. One team had definitely spent time brainstorming ideas before coming up with their design. All work for the other teams stopped to evaluate their solution which was successful. The other four teams used a similar design to deliver the ball.

This week the teams needed good communication to work together to validate their designs. Prizes were awarded.

Adopted from: The Tech – Circle of Pong