



Challenger's Morning Science Segment:

August 29, 2016

Topic: Air Molecules and Temperatures

Build: Hot Air Balloon

Credit:

<http://www.nsta.org/publications/news/story.aspx?id=52428>

Materials Needed:

Empty 2-liter bottle / balloon / bowl of water & ice / bowl of warm water

How to create your own hot air balloon: Remove the cap from the empty 2-liter bottle. Stretch out a balloon and place it over the open mouth of the bottle. Next, prepare two bowls of water. Fill a bowl with the coldest water available from the tap, and mix in multiple ice cubes to get it nice & cold. Next, fill a bowl the warmest water available from the tap. Then take your balloon covered bottle and place the bottom of the bottle in the warm water bowl. Watch as the balloon gradually starts to inflate. After 2-5 minutes, the balloon should be as inflated as much as possible from the warm water. Next quickly transfer the bottom of the bottle to the bowl of cold water. Watch as the balloon quick deflates and sometimes even gets sucked into the bottle!

The science [credit: <http://www.nsta.org/publications/news/story.aspx?id=52428>]:

This demonstration shows the movement of air modules in regards to temperature. When the gas inside the bottle is heated, the air modules move faster. The non-rigid walls of the balloon are hit harder and more often than when the air is at room temperature. This increase of movement and frequency causes the balloon to expand. When the gas is cooled, the modules decrease their speed and frequency of hitting the balloon walls. In turn, the balloon contracts and causes the gas to contract. It is a fun experiment for young kids to transfer the bottle from hot to cold and see results of temperature on an invisible gas!

Upcoming at the Challenger Learning Center of Maine: Challenger holds a bi-annual e-waste event for the public and businesses from any community. The event will be held at Challenger in Bangor on Saturday, September 17, 2016 from 9 AM – 1 PM. Help support this important fundraiser and take advantage of the opportunity to recycle your computers, TVs, monitors, keyboards and more. FMI- www.astronaut.org