Space It Up!

Science Film Festival
Knowledge Through Entertainment

Space | Mass | Air Pressure

Science Film Festival Films

Science Cliption – Tomatoes in Space

Learning Goals

• To understand how gas can fill a closed space.

Explanation of Scientific Principles

Gases are everywhere. You may have heard about the atmosphere. The atmosphere is an envelope of gases that surrounds the Earth. In solids, atoms and molecules are compact and close together. Liquids have atoms that are spread out a little more. The molecules in gases are really spread out, full of energy, and constantly moving around in random ways.

What is another physical characteristic of gases? Gases can fill a container of any size or shape. It doesn't matter how big the container is. The molecules spread out to fill the whole space equally. Think about a balloon. No matter what shape you make the balloon, it will be evenly filled with the gas molecules. Even if you make a balloon animal, the molecules are spread equally throughout the entire shape.

Liquids can only fill the bottom of a container, while gases can fill it entirely. The shape of liquids is very dependent on gravity, while less dense gases are light enough to have a more freedom to move.

Explanation of Connection to the Film

The film shows how how tomatoes could be grown on a spaceship. A glass or any closed container has its own space, like outer space outside the Earth. The piece of paper inside the glass is still dry, even though we put it into the bowl full with water. It shows us that there is still oxygen inside the glass, which can feed plants and vegetables.

Materials

• 1 large bowl - or container
• 1 piece of paper or tissue
• 1 empty glass
• Water

Preparation

1. Fill the water in a large bowl.
2. Take a piece of the paper or tissue and put it inside the empty glass.

1. Flip the glass face-down over the bowl with the water. Make sure the paper or tissue does not touch the water, so it should be at the top of the upside down glass.
2. Push the glass into the water until it is completely submerged.
3. Remove the glass and check the paper. (Be sure to keep the mouth of the glass parallel to the bottom of the bowl so the paper does not get wet).

www.youtube.com/watch?v=WBNNfKT6Kk0

youtu.be/iFbt0pa0ZDI?t=1m54s