



Mini Air-Cannon

In this package you'll find an engaging activity that you can do at home using materials found around your house! This activity focuses on the way that air moves from high pressure to low pressure. We hope you enjoy the activity and are awed, inspired and enlightened. This activity will require adult supervision.

PROGRAM BASICS

I. MINI AIR CANNON

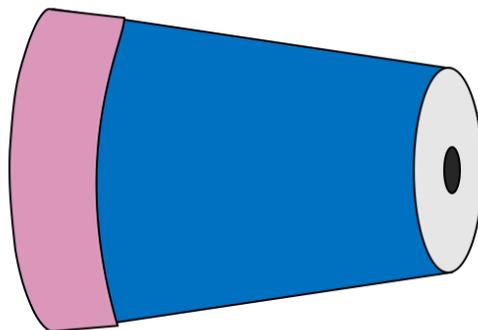
(Time: 30 minutes)

Children will create a mini air-cannon with simple household materials to explore the concepts of air pressure and air movement.

I. AIR CANNON EXPERIMENTS

(Time: 40 minutes)

Children will experiment with different cannon shapes and designs and make observations about the effects of those changes.



CURRICULUM CONNECTIONS – SCIENCE AND TECHNOLOGY

Grade 1

Students can experiment with the air cannon to gain a hands-on understanding of how the lungs work.

Grade 2

Students will explore the properties behaviour of air and how it moves in response to changes in pressure.

MINI AIR CANNON

(Time: 30 minutes)

Children will create a mini air-cannon with simple household materials to explore the concepts of air pressure and air movement.

Materials

- Paper or Plastic disposable cup
- Balloon
- Tape
- Pencil
- Scissors
- Strip of paper or a feather

Pre Activity Set Up

Gather the supplies.

Instructions

Introduction

Ask the children if they can see air. The answer is no, but we can see, feel and hear air moving. Air can be hard to catch and hard to control. But the children will create a cannon that moves air around and see how it blows around a feather/strip of paper.

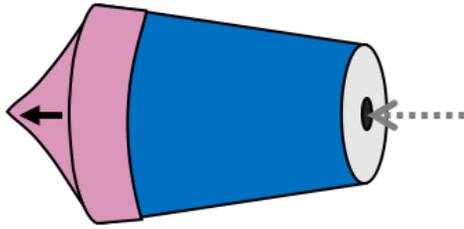
Development

Begin by cutting the narrow neck of the balloon off so that just the round part remains. Using a pencil, poke a hole in the middle of the bottom of the cup. Turn the cup right side up and carefully stretch the balloon over the mouth of the cup until it's stretched all the way around it like a very loose drum. You need to have a bit of extra rubber loose to pull on. Tape the edge of the balloon in place all the way around.

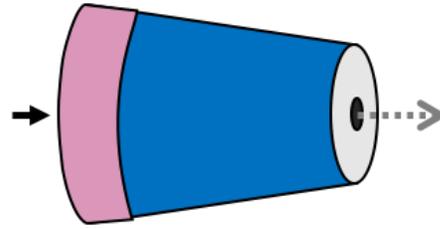
The air cannon is complete. To use it, direct the bottom of the cup at the object you want to move, punch a bit of balloon and pull back and let go. It will snap back into place and a puff of air will fly out of the hole. It will take a bit of practice to aim but, but eventually the children can move the feather/paper around with the air cannon.

Air Cannons change their volume

More Volume, Less Pressure



Less Volume, More Pressure



Conclusion

Ask the children to describe what they observed happening with the air cannon. Walk then through the steps and explain each part of the action.

- When they pull back on the balloon, they create more space inside of the cup (the volume increases), the pressure goes down and air flows in.
- When they let go of the balloon, the space gets smaller (the volume decreases) and the pressure increases and air flows out.
- Air likes to move from high pressure to low pressure.

When we breath, our ribs and diaphragm (a muscle that runs under our ribcage) move so that our chest has more space. This decreases the pressure in our lungs and air flows in. When we breath out, our diaphragm and ribs squeeze together, the space in our chest goes down, the pressure increases and air flows out of our lungs. You can demonstrate this with the children by getting them to place their hands on their ribs and stomach as they breath in and out to feel the way their ribs move.

AIR CANNON EXPERIMENTS

(Time: 40 minutes)

Children will experiment with different cannon shapes and designs and make observations about the effects of those changes.

Materials

- Paper or Plastic disposable cups, tubes or plastic containers (e.g. yogurt containers, tupperware)
- Balloons, saran wrap and other stretchy materials
- Tape
- Pencil
- Scissors
- Strip of paper or a feather

Pre Activity Set Up

Gather the supplies.

Instructions

Introduction

As the children to recap what they observed when creating the mini air cannon above. i.e. Air moves from high pressure to low pressure. We can change the air pressure of an object by decreasing or increasing the space inside.

Development

Folloing the basic instructions for the mini air cannon above, children can experiment with different designs and observe their effects. Offer the following changes they can make to design a new air cannon:

- Change the position of the opening
- Change the size of the opening
- Change the size of the container
- Change the shape of the container
- Change the stretchy material

When conducting science experiments, all changes you make (like the ones listed above) are called variables. Think about how many variables you're changing at a time. If you want to investigate what changing the hole size has on your air cannon, you might make three paper cup cannons that were the same size but all had different hole sizes. If you want to see what would happen if the container size was different, you could create a small cannon (paper cup) and a large cannon (e.g. yogurt container) that both have the same sized hole.

Conclusion

Ask the children to describe what they did and what they observed. Which cannons worked best? Which cannons didn't work well. Did they notice any changes in the way the air behaved when it shot out of the cannons with different designs?