

# Together We Can Rule the Galaxy

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## OVERVIEW

### **NGSS Science Domain:**

Earth & Space Science

### **Cross-Cutting Concepts (CCC'S):**

Structure & function, System and system models

### **NGSS Objective/Core Idea:**

ESS1. A – The universe and its stars. ESS1. B – Earth & the solar system

### **Supplies Needed:**

Black construction paper, white colored pencils, star stickers, Q-tips, glue, Alka-seltzer, film canisters, rocket papers, scissors, tape, crayons, markers, water.

## LESSON PLAN

### **Introduction:**

Go over rules, announce science awards, etc.

### **Demonstration:**

Go over Earth's axis, rotation, and revolving calling on students as examples. One of them is the sun, some of them are the planets and show how the sun stays still, but the Earth rotates around it, etc.

Go over constellations in the sky with the younger grades.

### **Work Period:**

Smartboard presentation on Galileo Galilei. Go over slides.

# **LAB ACTIVITIES**

## **4TH/5TH:**

Demonstrate how to use the Space Maker sound toy.

### **Design rockets** (Rocket science)

- 1 student color- Designer
- 1 student cut out shapes- Engineer
- 1 student roll up and tape on pieces- Mechanic
- 1 student to put in water/Alka-Seltzer – Aerospace scientist
- Go launch rockets

## **2ND/3RD:**

Demonstrate how to use the Space Maker sound toy.

### **Design rockets** (Rocket science)

- 1 student color- Designer
- 1 student cut out shapes- Engineer
- 1 student roll up and tape on pieces- Mechanic

- 1 student to put in water/Alka-Seltzer – Aerospace scientist
- Go launch rockets

## **K/1ST:**

- Silly song
- Go over constellations in the sky and some of their stories
- Have them design constellations with star stickers (connect the dots) and draw the lines in between with white colored pencils on black construction paper or glue Q-tips to connect the dots. (use 3 or 4 different options)
- Watch me launch a rocket- demonstration. Ask for helpers.
- Go launch rocket
- Read a book about space

# **CONCLUSION**

## **Closure/Summary:**

What did you learn? What cross-cutting concept do you think we used? Why?

## **Handout:**

Picture of Galileo with science in the community activity attached (off of my website).

## **Self Assessment:**

What did and didn't work for this lesson?

## **Extra Information:**

When the fizzy tablet is placed in water, many little bubbles of gas escape. The bubbles go up, instead of down, because they weigh less than water. When the bubbles get to

the surface of the water, they break open. All that gas that has escaped from the bubbles pushes on the sides of the canister.

Now when you blow up a balloon, the air makes the balloon stretch bigger and bigger. But the little film canister doesn't stretch and all this gas has to go somewhere!

Eventually, something has to give! So the canister pops its top (which is really its bottom, since it's upside down). All the water and gas rush down and out, pushing the canister up and up, along with the rocket attached to it.

We call this wonderful and useful fact the law of action and reaction. The action is the gas rushing out of the rocket. The reaction is the rocket taking off in the other direction. In other words, for every action, there is an equal and opposite reaction. The rocket goes in the opposite direction from the gas, and the faster the gas leaves the rocket, the faster the rocket gets pushed the other way