



THE SCENARIO

What do astronauts need to get to space? Lift-off! But that is sometimes easier said than done... What factors do you need to consider? (Gravity for one!)

LEARNING CONTEXTS

*Laws of Motion, Space Exploration
Chemistry Foundations*

Process

MATERIALS

Per group or demonstration:

- 1 Empty plastic soda bottle (500mL and other various sizes)
- Cork
- Assorted building materials such as: straws, cardstock, paper towel tube, etc.
- Tape / glue
- Scissors
- Piece of paper towel
- Various acidic liquids (vinegar, lemon juice, other fruit juices)
- Baking Soda
- Measuring cup and spoon

SAFETY & SET-UP

Do not taste any substance in a science lab setting. Put on Safety Glasses. You may choose to wear non-latex gloves.

1. Gather materials and pre-measure amounts.
2. Do not tell students what the substances are, have them make observations (Ex: I see a clear liquid).
3. Measure and pour 60mL of white vinegar into 500mL soda bottle.
4. Measure 1T (15mL) of baking soda and wrap into a small ball of paper towel.
5. Drop baking soda 'parcel' into the bottle and quickly cork.
6. Observe/Discuss.
7. Challenge students to use this information to design a rocket that will achieve maximum lift-off.

STEPS TO INQUIRY

Problem Solving

OBSERVE

Ask students to record observations from the demonstration. Remind students of the difference between an observation and an inference and to only use their senses (Ex: I see a clear liquid ✓, vs: I think it's vinegar in the beaker ✗).

QUESTION / WONDER

What do you wonder about what you've observed? What variables can affect this reaction? What changes can help you maximize the reaction?

EXPLORE

Develop and safely carry out an investigation to answer your wonderings and questions. Remember to only change one variable at a time (independent variable) and have something you can measure (dependent variable). If I change I.V., how will it affect D.V.? Research and discuss the Science of what is happening.

CURRICULUM OUTCOMES

Strand: Scientific Literacy

Big Ideas: Investigation, Sensemaking & Communication

