



What's out There?

Group Activity: Science – Balloon Rocket

Objective:

In this activity, students are engaged in answering a scientific inquiry by using logic-based evidence, observation, and prediction to report formulated explanations linked to scientific knowledge in an estimation task.

Materials:

- Prediction cards (provided)
 - Balloon
 - Yarn (6 feet)
 - Straw
 - Masking tape
 - Chairs (2)
 - Pencils (1 per student)
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Duration: 15-20 minutes

Preparation:

1. Print and cut out the prediction cards (1 per student).
 2. Clear a large space in the classroom and set up two chairs about five feet apart, facing away from each other.
 3. Set up a demonstration table in the front of the room, visible to all students. Collect all needed materials and place them on or near the demonstration table.
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Supplementary Information:

- For learners who would benefit from a more detailed explanation of this exercise, explain the following scientific principle after the experiment:
 - When you let go of the balloon's opening, air escapes the balloon, creating a pushing force in the opposite direction. This forces the balloon to move across the yarn. This is similar to a real rocket, which is propelled upwards when an explosion from the bottom of the rocket forces it to move in the opposite direction.



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Activity Script:

We recommend using the following verbal cues as you model each step.

1. **"Today we're going to do an experiment called 'Balloon Rocket.' We're going to see what happens when we create a balloon rocket engine."**
[Gather students around the demonstration table and indicate the materials.]
2. **"Usually rockets fly into space, but our rocket is going to fly between these two chairs along a piece of yarn. Our first step is to tie the yarn to one of these two chairs. Can I get a volunteer to help me?"**
[Choose a student volunteer to assist you in tying one end of the yarn to the back of a chair.]
3. **"Next, we're going to fasten a straw to the yarn. This is going to be the anchor of our balloon rocket. Can I get a volunteer to thread the straw onto the yarn piece we just attached to the chair? Then we'll attach it to this other chair."**
[Choose a student volunteer to assist you in threading a drinking straw onto the other end of the yarn. Tie this end to the second chair, about six feet from the first chair. The yarn piece should be pulled taut between the two chairs, with the straw able to move back on forth along the yarn.]
4. **"In order to mount our balloon rocket, we need to add some tape to the straw. Who can help me?"**
[Choose a student volunteer to assist you in placing two two-inch pieces of masking tape perpendicular across the straw. The pieces of tape should be hanging over both sides of the straw and yarn.]
5. **"For our experiment, we're going to attach a balloon to the tape, and then let out the air and see what happens. Before we do this, let's make predictions about what will happen. Who remembers what a prediction is? I'm going to pass out prediction cards and pencils and I want you to circle your prediction on the card. Do you think the balloon will move or stay still after we let the air out? After the experiment, we'll see if our predictions were right!"**
[Distribute prediction cards and pencils to students. Prompt them to circle their predictions.]
6. **"We're going to prepare our rocket by blowing up the balloon and attaching it to the tape on the yarn. Can I have a volunteer help me set it up?"**
[Choose a student volunteer to help you inflate the balloon. Leave the end untied, but keep your hand on the balloon's opening so air doesn't escape. While keeping the opening sealed, carefully attach the balloon to the straw using the tape you've placed perpendicular across the straw.]
7. **"Now is the fun part! We're going to pull the balloon to one end of the yarn while holding it closed. Let's count down from ten, and we'll let the balloon go after the countdown!"**
[While holding its opening closed, pull the balloon to one end of the yarn so that it's touching the chair attached to that end of yarn. Prompt students to help you count down.]



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8. **“Ten, nine, eight, seven, six, five, four, three, two, one, BLAST OFF!”**

[Let go of the balloon's opening and watch it move across the yarn to the other chair.]

9. **“What happened to the balloon? Were your predictions correct?”**

[Revisit the prediction cards. Prompt students to circle “Yes” if their predictions were correct, and “No” if their predictions were incorrect.]



Name: _____

Balloon Rocket Prediction Card

Circle what you predict will happen to the balloon:

Letting the air out will make the balloon MOVE across the yarn	Letting the air out will make the balloon STAY STILL on the yarn

Was my prediction correct?

YES	NO
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