

SEEK2LEARN Montessori Nursery

Balloon Rocket STEM Activity:

Learning Objective: To explore the principles of thrust, force, and motion through the construction and launch of a balloon rocket.

Learning Outcomes:

1. Students will understand the concept of thrust and how it propels objects forward.
2. Students will learn about Newton's Third Law of Motion: For every action, there is an equal and opposite reaction.
3. Students will engage in hands-on experimentation and observation to explore the effects of varying balloon sizes or air pressure on the distance and speed of the balloon rocket.
4. Students will develop problem-solving skills as they troubleshoot and adjust their balloon rocket designs for optimal performance.

Procedure:

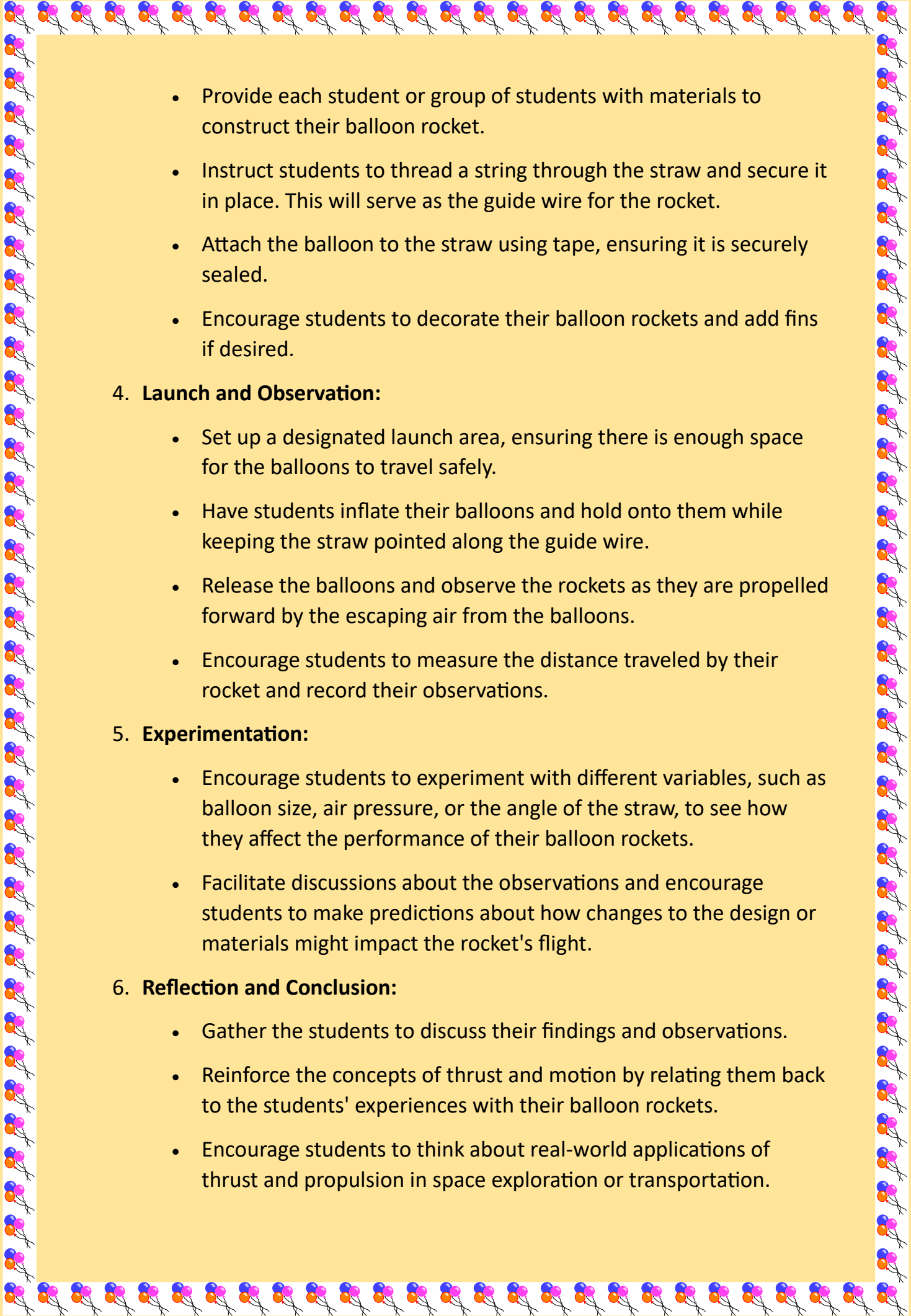
1. Introduction:

- Begin by discussing the concept of thrust and introducing the activity of making a balloon rocket.
- Explain to the students that they will be building a simple rocket using a balloon and observing how the balloon's propulsion force causes the rocket to move.

2. Materials:

- Balloons
- Drinking straws
- String or fishing line
- Tape
- Scissors
- Optional: Lightweight cardboard or foam for making rocket fins

3. Construction:

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- Provide each student or group of students with materials to construct their balloon rocket.
 - Instruct students to thread a string through the straw and secure it in place. This will serve as the guide wire for the rocket.
 - Attach the balloon to the straw using tape, ensuring it is securely sealed.
 - Encourage students to decorate their balloon rockets and add fins if desired.

4. Launch and Observation:

- Set up a designated launch area, ensuring there is enough space for the balloons to travel safely.
- Have students inflate their balloons and hold onto them while keeping the straw pointed along the guide wire.
- Release the balloons and observe the rockets as they are propelled forward by the escaping air from the balloons.
- Encourage students to measure the distance traveled by their rocket and record their observations.

5. Experimentation:

- Encourage students to experiment with different variables, such as balloon size, air pressure, or the angle of the straw, to see how they affect the performance of their balloon rockets.
- Facilitate discussions about the observations and encourage students to make predictions about how changes to the design or materials might impact the rocket's flight.

6. Reflection and Conclusion:

- Gather the students to discuss their findings and observations.
- Reinforce the concepts of thrust and motion by relating them back to the students' experiences with their balloon rockets.
- Encourage students to think about real-world applications of thrust and propulsion in space exploration or transportation.

Balloon Rockets

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