

Basic and Integrated Science Process Skills Laboratory Activity – Teacher Edition

Paper Airplane Experiment

Background Information:

Depending on the aerodynamic design, paper airplanes can fly fairly far and glide through the air with ease. Physics can come in handy when designing the craft, as various forces can easily affect the distance and length of the flight. The current Guinness Book of World Record for the furthest paper aircraft flight is 69.14 meters. This record was accomplished on February 26, 2012 in North Highlands, California by John M. Collins and Joe Ayooob. In order to achieve a flight of this length, one must learn about various designs and how they work with the different forces affecting flight.

There are various designs which each cause the plane to fly differently. For instance, planes which are longer and balanced will fly longer, but those that are shorter and heavier in the front will barely fly at all. The key to making a great paper airplane is to experiment.



In this laboratory activity, you will make one design of paper airplane using various types of paper. You will be measuring the distance your plane traveled in centimeters and you will get three trials.

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Learning Objectives:

At the end of this laboratory activity, students are expected to:

- Use basic and integrated science process skills to:
- Write a hypothesis.
- Measure and record distances in cm.
- Write a conclusion.

Pre-lab Questions:

1. What is the difference between qualitative and quantitative observations?

2. What is the independent and dependent variable in this experiment?

3. Write a hypothesis using an “IF ...THEN...” statement. Remember to state your manipulated (Independent) variable after the “IF” and the responding (dependent) variable after the “THEN”.

Laboratory Preparations:

Materials:

- A variety of paper types (printer paper, construction paper, card stock, notebook paper, etc.)
- Metric ruler

Procedure:

1. Choose up to three types of material for your plane.
2. Fold your airplane (must use the same design for all three pieces of paper).
3. Standing at the “throw line”, you will “launch” your plane.
4. Measure the distance from the throw line to the end of the landed plane in centimeters.

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	Paper type		
Trial #			
1	_____cm	_____cm	_____cm
2	_____cm	_____cm	_____cm
3	_____cm	_____cm	_____cm
Average			

Post-lab Questions:

1. Which paper type flew the farthest on average?

2. Why do you think that paper type flew the farthest?

3. What would you do differently if you did this experiment again?

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Pre-lab Questions:

1. What is the difference between qualitative and quantitative observations?

Qualitative observations are made when you use your 5 senses. Quantitative observations have to do with numbers and amounts.

2. What is the independent and dependent variable in this experiment?

Independent variable: type of paper, Dependent variable: distance the plane travels forward in cm

3. Write a hypothesis using an “IF ...THEN...” statement. Remember to state your manipulated (Independent) variable after the “IF” and the responding (dependent) variable after the “THEN”.

(Answers will vary) Example: If I use construction paper, then my plane will fly farther forward in cm than notebook paper or printer paper.

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(Answers will vary)

Post-lab Questions: (Answers here will vary)

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