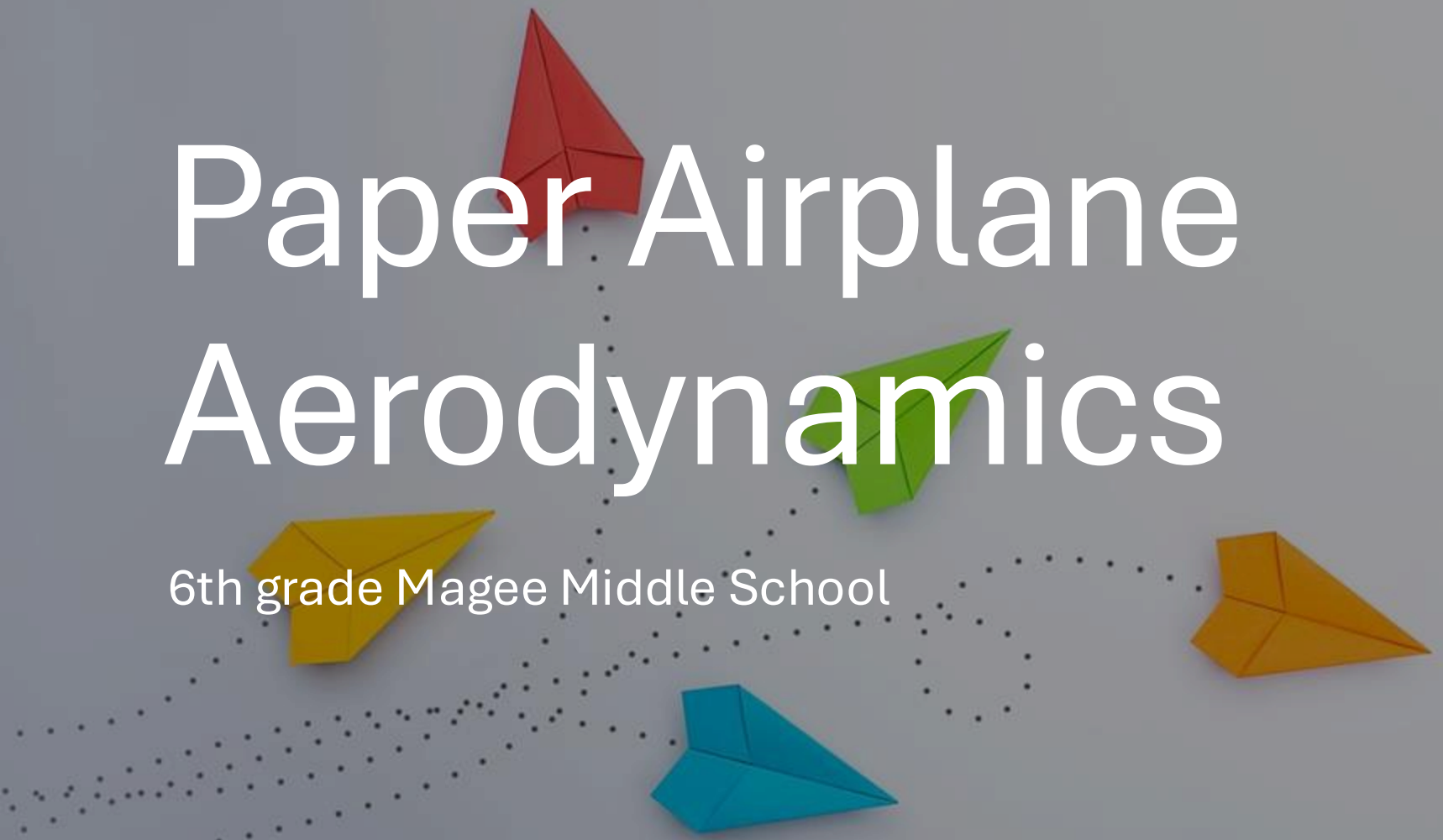
# Paper Airplane Aerodynamics

6th grade Magee Middle School



# Introduction

- A few weeks ago, I made a paper airplane. It was really cool and made me ask "How does this work?"
- While I was exploring the aerodynamics, I found some things I'm focusing on. Those things are, lift (upward force), weight/gravity, (downward motion), thrust (forward motion) and drag (backward resistance.)

# Research Question

How does a paper airplane fly? Thrust- forward force created by throwing the plane. Lift- created by moving air under the wings, keeping the plane moving. Weight- gravity constantly pulling on the paper plane. Drag- air resistance that slows the plane down. When all those things work together and you simply throw it, it will fly

# Which paper airplane flies the best?

- To test which paper airplane flies the best, I made and tested four different paper airplanes.

# Engineering Goal and Succsess Criteria

My engineering goal is to learn the aerodynamics for a paper airplane and why it flies when you throw it.

The succsess criteria is to know which paper airplane flies the best and why.

# Matirials list

A stack of paper, paperclips, and patience

# Safety Precautions/Considerations

Don’t throw the paper airplanes at someone and don’t poke somebody with the paper clips.

# Procedures

- Get a couple pieces of paper and some paper clips then fold the paper into a paper airplane, throw it. If one side of the plane is too heavy, use some paper clips and attach one at a time on the side that is too light. You may need to attach more than one paper clip.

# Results and Data

Here are the results of which plane flew the best out of the four.

- #1 winner is the Stunt paper airplane which flew  270 inches
- #2 is the Glider paper airplane which flew 229 inches
- #3 is the Dart paper airplane which flew 227 inches
- #4 is the Classic paper airplane which flew 101 inches

# Results and Data

- The Stunt plane relied on the loops and tricks to get the furthest.
- The Glider plane used it's short, flat wings to glide through the air to get far
- The Dart plane used it's short but sharp aerodynamic wings and raw force to cut through the air.
- The Classic plane used medium length wings and a sharp aerodynamic nose, but came up short.

# Conclusion

- We met our engineering goal.
- We had some struggles folding the correct planes and them flying correctly.
- But after many attempts we folded them correctly and it went well.
- Our hypothesis was also correct.

# Future Research

- If other scientists wanted to learn more about this topic I think over the year's they could make a plane that could fly like a paper airplane and could maybe be used to deliver groceries or food.

# Sources

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| How To Make The Best Stunt Paper Airplane \| Best Paper Airplanes |
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| Channel name: Foldable Flight |
| Flight! Author: Anita Yasuda |