

# **Feasibility Report on Star Crusher Paper Airplane**

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## **Introduction**

### **Purpose**

The purpose of this feasibility report is to determine whether the Star Crusher instruction can be helpful to the local middle school teacher to teach basic aerodynamics concept to the 7<sup>th</sup> grade class within a 40-minute class period.

### **Problem**

One of the main problems is to explain the application of aerodynamic designs and how different designs may result in more drag of the air and vice versa. The structure of the designs may affect the flight distance as many aspects come into play, like lift, weight, drag, and thrust of a certain design. Therefore, when the structure of the airplane is an airfoil, it will produce a good flight distance.

### **Scope**

In order to determine if these instructions are useful, they need to be tested and evaluated based on these criteria, like flight distance, airtime, and time taken to build.

## Discussion

### Criteria 1: Time taken to build

Explanation:

Since it is a 40-minute class, the has to include the time used to explain the design, build the paper airplane, as well as clean-up before the class ends. It is crucial that the time taken to build the paper airplane is not too much.

Data:

There will be 10 individuals. They complete building the Star Crusher Paper Airplane with an average time of 13 minutes and 36 seconds.

Interpretation:

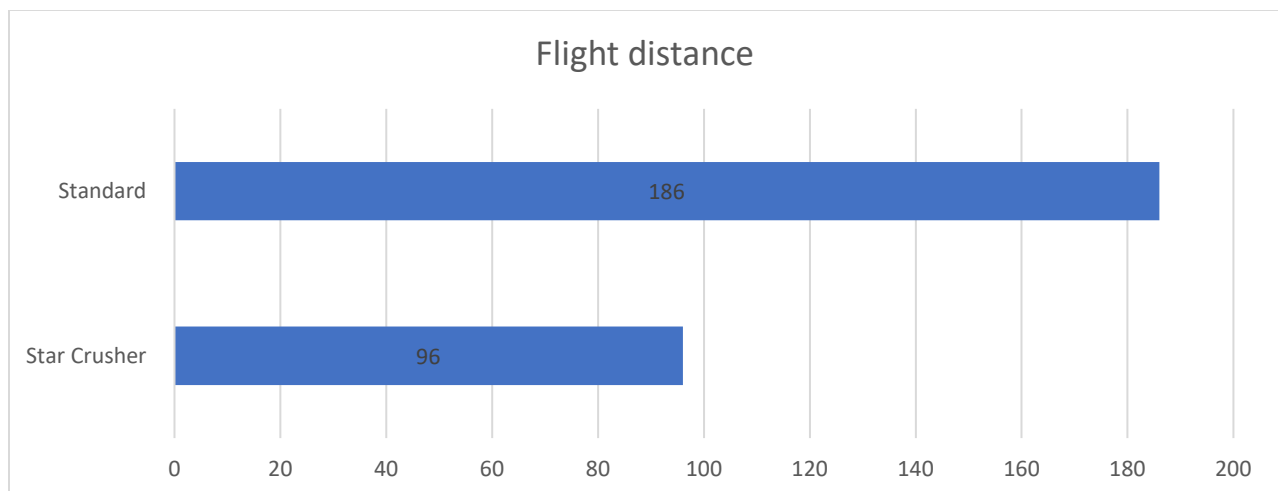
The instructions to build the paper airplane are pretty lengthy to follow through. For individuals who are the average age of around 32, it took them 13 minutes and 36 seconds. So, for a 7<sup>th</sup> grader, it might take them a long time to build. This does not include the time taken to clean-up.

### Criteria 2: Flight Distance

Explanation:

The flight distance is measured by inches. It measures the distance the paper airplane traveled horizontally from the starting point to the ending point.

Data:



Interpretation:

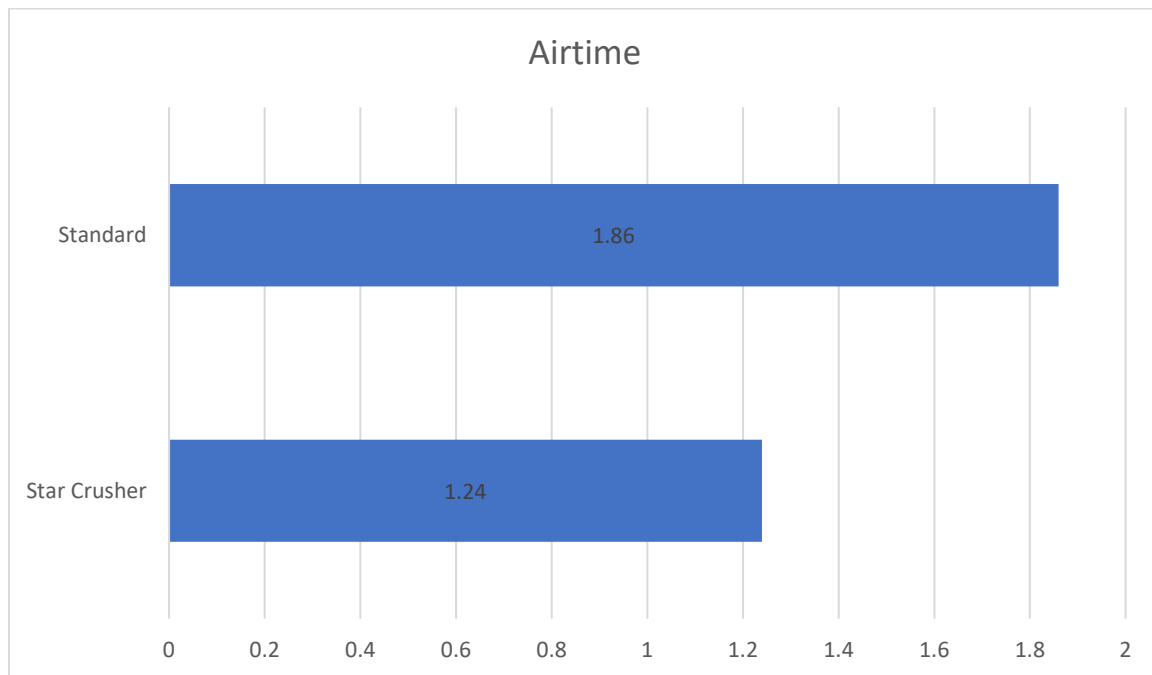
The Star Crusher Paper Airplane flew 90 inches lesser than the standard paper airplane. Therefore, we can say that the Star Crusher design is less aerodynamic than the standard paper airplane.

### Criteria 3: Airtime

Explanation:

Airtime is measured by seconds. It measures the total time taken for it to fly from the starting point to the ending point.

Data:



Interpretation:

The standard paper airplane travels 0.62 seconds longer than the Star Crusher paper airplane. Therefore, we can say that the standard paper plane has a lesser drag of the air.

## **Conclusion**

### **Summary:**

The data we obtained from this report shows that Star Crusher is not a feasible paper airplane design because the time taken to build the paper airplane is too much. It is very hard for the student to achieve a better understanding of the concept of aerodynamic in the class. On top of that, the Star Crusher paper airplane has a shorter airtime and a shorter flight distance compare to the standard paper airplane design.

### **Conclusion:**

While the Star Crusher has decent airtime and flew for a good distance, but it is not a feasible activity for 7<sup>th</sup> grade student to follow through all the instruction and learn the idea behind aerodynamic in a 40-minute class.

### **Recommendation:**

The science teacher should choose a simpler paper airplane design to teach the student the idea of aerodynamics.