

X - PLORING SCIENCE

FLIGHT WEBQUEST

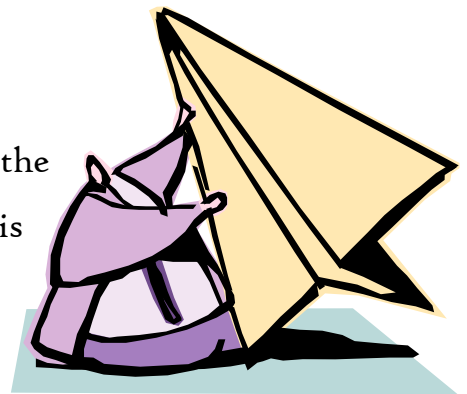
PAPER AEROPLANE PROJECT

[Introduction](#) ~ [Task](#) ~ [Process](#) ~ [Resources](#) ~ [Evaluation](#) ~ [Conclusion](#) ~ [Teacher Guidelines](#)

~ INTRODUCTION ~

Everyone has made paper aeroplanes and we all once have been full of expectation of the one that will never hit the ground, just keep going. But unfortunately, the planes we put high hopes on usually fall flat on the ground within a couple of seconds.

The record for a paper aeroplane remaining in the air is 27 seconds, would you believe? But this was no fluke. Ken Blackburn was his name and he was an aeronautical engineer.



Imagine what kind of plane you could produce if you knew the main principles of flight or how to design the perfect paper aeroplane.

The same rules apply for building a paper aeroplane as for a real aeroplane, and the same principles of flight apply. Mmmmmmm!!!!

[Click here to view your task.](#)

~ TASK ~

Your task today is to research using the Internet the main physical principles of flight. How do planes fly? What causes them to take off? Is it the speed? The wings? Both? Is there more than one theory?

Once you have researched the principles, you must then look through the Internet to find out how to build the perfect paper aeroplane. Does it make a difference what you make it from? How you fold it? Do you put a fin on it?

Once you have done all your research you have to complete two tasks:

1. You must produce a presentation of what you have found out. It can be a poster, an article, a website or a PowerPoint® presentation. The material must be original and include pictures and diagrams.
2. You must make a paper aeroplane that even Ken Blackburn would be proud of. It must be able to fly for a substantial amount of time and it must consider the principles of flight and plane construction. Plans for its construction must be clear.



[Click here to see how you should carry out your task](#)

~ PROCESS ~

1. In groups of 2 people, assign areas to research.
2. You have 5 class periods to finish the project.
3. Fill out [Research Summary Page](#) as you search the web- this will help you plan your work.
4. Don't limit yourself just to the web. Look at encyclopaedias, magazines, newspaper articles and books.
5. The paper aeroplane can only be A 4 in size and cannot contain any sellotape, paper clips, glue etc. It can only be one whole page i.e. you are not allowed to cut the paper.
6. The plan for the plane must be clearly outlined.
7. The following must be included in the presentation:
 - ★ Aerodynamics
 - ★ Bernoulli's Principle
 - ★ Dihedral Angle
 - ★ Angle of Attack
 - ★ Stability
 - ★ Thrust
 - ★ Lift
 - ★ Drag
 - ★ Weight
 - ★ Fluid Dynamics
 - ★ Newton's Laws

[Click here for resources and web links](#)

~ RESOURCES ~

The following is a list of useful websites to visit to gather your information for your task.

DO NOT LIMIT YOURSELF TO THE WEB ONLY

General Search Tools:

[Encarta](#)

[Google](#)

[Alta Vista](#)

[Worldbook](#)

Flight and Paper Plane Links

[Aeronautics Learning Lab](#)

[Aeronautic Internet Textbook](#)

[See how it flies](#)

[Aerodynamics of Aeroplane wings](#)

[Basic Aeronautics](#)

[How Planes Fly](#)

[Why planes don't really fly](#)

[How Plane's Fly quiz](#)

[How Aeroplanes Work \(How Stuff works\)](#)

[How things fly](#)

[Why planes fly](#)

[Alex's Paper Aeroplanes](#)

[Paper Aeroplane World](#)

[Build the Best Paper Aeroplane in the World](#)

[Ken Blackburn's Paper Aeroplane Website](#)

[Links to Other Relevant Sites](#)

~ EVALUATION ~

Your Project will be assessed under the following guidelines.

CRITERIA	MARKS
Paper Aeroplane Construction	20
Plans for Plane	10
Test Flight (1 mark per second, max 10)	10
Presentation	40
Definitions	10
Team Work	10
Total	100 Marks

[Click here for Conclusions](#)

~ CONCLUSION ~

Hope you enjoyed making your paper aeroplane using scientific principles as opposed to luck. Aerodynamics is one element of a section of physics called fluid dynamics. Why not look up the internet to find out more areas of physics that you use in everyday life.

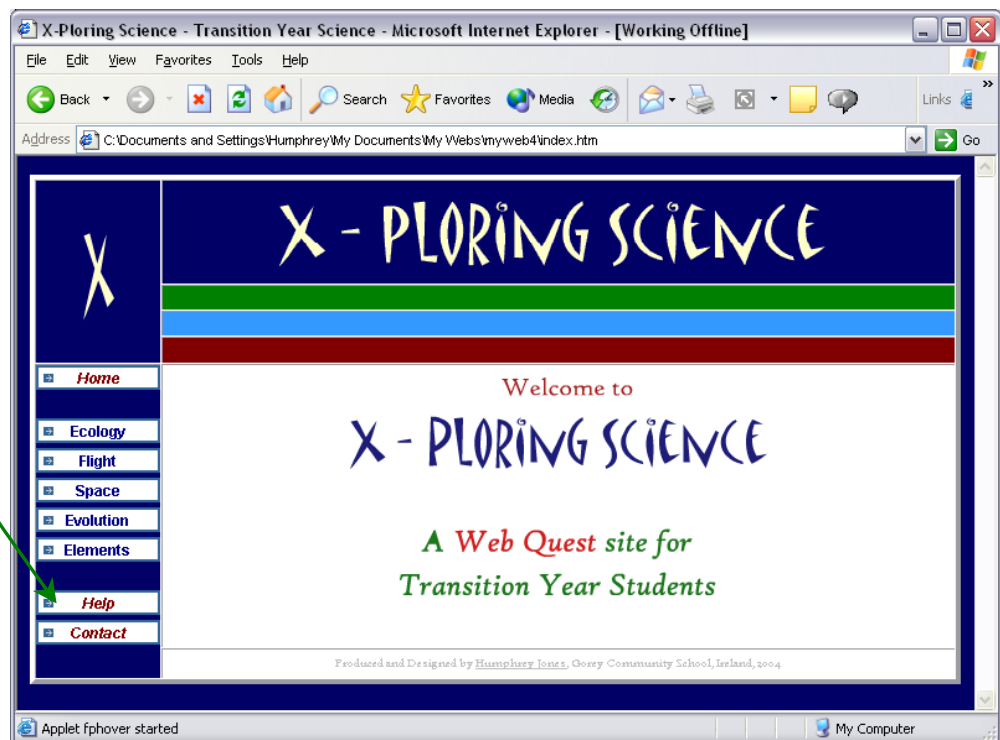


~ TEACHER GUIDELINES ~

The flight webquest outlines a number of principles of physics that students often don't see as being applicable to everyday life. This project allows for independent research, active learning strategies, team work and problem solving. The site is self explanatory.

1. Print out the [Research Summary Page](#) for each student.
2. Give some input into the use of Microsoft PowerPoint®
3. Emphasis the assessment procedures and stress the importance of originality and teamwork.
4. Place a time line on the project. 5 class periods is the recommended allocated time.

● For More information visit the [Help](#) section in the main site.



PAPER AEROPLANE PROJECT

RESEARCH SUMMARY PAGE

Name of Team:	
Definitions:	Aerodynamics Dihedral Angle Angle of Attack Stability Thrust Lift Drag Weight Fluid Dynamics
Bernoulli's Principle	
Newton's Law's	
Useful Links for Pictures:	
Interesting Facts	
Plane Design Features	