

Aviation - Taking Flight 航空學 - 展翅高飛

How Do Airplanes Fly?

Planes! Have you ever watched an airplane fly over and wondered how it can soar through the sky so effortlessly? Four forces keep an airplane in the sky. They are lift, drag, thrust, and gravity. Lift pushes the airplane up, gravity (or weight) is the force that pulls the airplane toward Earth, thrust is the force that moves the airplane forward, and drag slows the airplane. An airplane flies when all four forces act together and balance each other. The students studied these four forces and learned how they work together to make airplanes fly. They played games and tested the workings of these forces with different paper plane prototypes.

Taking Flight

When an airplane takes off, it needs to generate speed to create enough lift. Therefore, it needs a long runway. But what if there isn't a long runway? What if the airplane has to take off from a short runway, like on an aircraft carrier ship? This was the big question the Grade 1 students faced in this project. To solve the problem, the students had to design and make an airplane launcher. They worked together as a team and came up with brilliant ideas. The most fun was using their launchers to send their paper planes flying.

飛機是如何飛行的？

飛機！你是否曾經看著一架飛機從天空飛過，並好奇它為什麼能如此輕鬆地翱翔在空中呢？有四種力量讓飛機能夠停留在天空中，它們分別是：升力、阻力、推力和重力。升力會將飛機向上推；重力（重量）則是把飛機拉向地球的力量；推力是讓飛機向前移動的力量；而阻力則會減慢飛機的速度。當這四種力量同時作用並彼此平衡時，飛機就能飛行。學生研究這四種力量，並學習它們如何互相配合，使飛機能夠飛起來。他們還透過遊戲以及測試不同紙飛機模型的方式，來瞭解這些力量的運作原理。

展翅高飛

當飛機起飛時，它需要產生速度來形成足夠的升力，因此需要一條長長的跑道。但如果沒有長跑道該怎麼辦呢？如果飛機必須從短跑道起飛，例如：航空母艦上的跑道，又該怎麼辦？這就是一年級學生在這項專題中所面臨的重要問題。為了解決這個問題，學生必須設計並製作一個飛機發射器。他們以團隊合作的方式，一起想出許多精彩的點子。最有趣的部分就是使用自己製作的發射器，讓紙飛機飛上天空。

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1

ASK + IMAGINE
 提問 + 創思

2

We listed all the different things that can fly and discussed their similarities. We then used our knowledge on the 4 forces of flight to play a fun board game. 我們列出所有不同種類會飛的東西，並討論它們之間的相似之處。接著，我們運用對飛行四大作用力的知識，玩了一個有趣的桌遊。



3

PLAN
 計畫

PLAN

We selected the materials we wanted to use for making our launchers. 我們挑選想要用來製作發射器的材料。



4

CREATE
 創造

CREATE

We helped each other and worked together on making our airplane launchers. 我們互相幫忙並合力完成飛機發射器。



5

IMPROVE
 改進

IMPROVE

Testing was the most FUN! We got to launch paper planes, and make adjustments to our launchers in order to have them work perfectly. 測試是最有趣的部分！我們可以發射紙飛機，並調整我們的發射器，讓它們能夠完美運作。

