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Kang Chiao International School, Hsinchu Campus, International Department

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Aviation – Taking Flight
飛行

How to airplanes fly?

Planes! Have you ever watched an airplane fly over and wondered how it can soar through the sky so effortlessly? Different forces keep an airplane in the sky. They are lift, drag, thrust, and gravity. The students quickly got to grips with these forces through games and other activities. This gave them a better understanding of what is required to launch an airplane. 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 these forces work together and are in balance.

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 that the Grade 1 students were faced with in this project. To solve the problem, the students had to design and make an airplane launcher. They worked together in their teams and came up with brilliant ideas by using their understanding of forces to test a variety of materials until they found the best combination for the ideal launcher.

飛機如何飛行？

飛機！你有沒有看過飛機從天空飛過，並想知道它是如何毫不費力地在天空中翱翔的？不同的力量讓飛機可以保持在天空中。它們是升力、阻力、推力和重力。學生透過遊戲和其他活動很快就掌握了這些力量，這讓他們更加地瞭解需要什麼發射飛機。升力將飛機向上推，重力（或重量）是將飛機拉向地球的力，推力是使飛機向前移動的力，而阻力則使飛機減速。當這四種力共同作用並保持平衡時，飛機就會飛行。

起飛

當飛機起飛時，需要產生足夠的速度以產生足夠的升力。因此，它需要一條很長的跑道。但是，如果沒有長跑道該怎麼辦呢？如果飛機必須從短跑道起飛該怎麼辦呢？例如在航空母艦上？這是一年級學生在這項專題中面臨的一個大問題。為了解決這個問題，學生必須設計並製作一個飛機發射器。他們在團隊中相互合作，利用對力的理解來測試各種材料，並想出絕妙的點子，直到找到理想發射器的最佳組合。

1 ASK + IMAGINE 提問 + 創思 2

We used our knowledge on the 4 forces of flight to play a fun board game.
我們利用 4 種飛行力的知識來玩一個有趣的桌遊。

3 PLAN 計畫

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

4 CREATE 創造

We helped each other and worked together on making our airplane launchers.
我們互相幫忙，共同製造飛機發射器。

5 IMPROVE 改進

Testing was the most FUN! We got to launch paper planes and make adjustments to our launchers.
測試是最有趣的！我們必須發射紙飛機，並對發射器進行調整。