

April 2025

Sail Cars 帆船車

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Creative Design Challenge

Students put their creative thinking skills to the test by designing and constructing their own wind-powered sail cars. The goal? To make their car travel the greatest distance using only wind energy. Through this hands-on challenge, they discovered the importance of carefully planning and constructing key components such as the chassis, mast, sail, and wheels.

Exploring Friction and Motion

As part of their investigations, students explored two key types of friction that influence movement: fluid friction and rolling friction. They also learned how kinetic energy transfers from the wind to the car. With this knowledge, they made thoughtful decisions about designing their sail cars for optimal performance.

Putting the Cars to the Test

Once their designs were complete, students put their cars through a series of tests to see how well they performed. Each group recorded their data in a results table for comparison, analysing what worked well and what could be improved. After the initial test run, they had the opportunity to modify their designs, applying what they had learned to enhance their cars for even better performance.

創意挑戰

學生透過設計和製作自己的風力帆船車來考驗他們的創造思維能力。設定的目標是什麼呢？讓他們的汽車僅靠風力就能行駛最遠的距離。透過這個實作挑戰，學生發現仔細規劃和建構關鍵組件（如底盤、桅杆、帆和車輪）的重要性。

研究摩擦的類型

作為研究的一部分，學生探索影響運動的兩種主要摩擦力：流體摩擦力和滾動摩擦力。他們還學習動能是如何從風傳遞到車輛的。憑藉這些知識，他們在設計帆船車時做出深思熟慮的決策，以達到最佳性能。

測試帆船

設計完成後，學生將他們的車輛進行一系列測試，以檢視它們的表現如何。每組記錄測試結果，並在結果表格中進行比較，分析哪些部分表現良好，哪些可以改進。在初步測試後，他們有機會對設計進行修正，運用所學知識來提升車輛性能。

1

ASK + IMAGINE
提問 + 創思

2



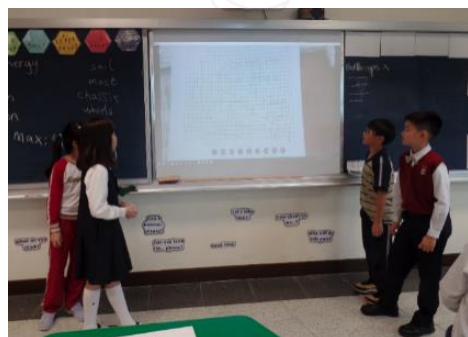
Students researched how friction affects the motion of objects.
學生研究摩擦力如何影響物體的運動。

4

CREATE
創造



Team members collaborated to build their prototypes.
小組成員互相合作，建立他們的原型。



3

PLAN
計畫

5



Teams brainstormed the best way to create their prototype.
經過小組集思廣益，討論能夠製造出原型的最佳方法。

5

IMPROVE
改進



After testing, students used what they learned from the test results to improve their designs.
測試後，小組利用從測試結果中學到的知識來改善他們的設計。

6

PRESENT
展現

6

Students collaborated on their final report, before presenting their findings to the class.
向全班同學介紹他們的結論之前，他們先合力完成最終報告。