

Making a Balloon Rocket

製作氣球火箭

Introduction

Space exploration has brought about some of the most important scientific breakthroughs of modern science. From making the rocket, to performing experiments on the International Space Station, space travel has changed how we think about our world. So with this experiment, our fourth graders have begun to learn about the processes and challenges of sending people into space using rockets. What makes them go? What forces do we need to overcome? What shapes and designs make the best rockets?

Testing Our Rockets!

First, our students had to learn about the forces that act on rockets. Students watched videos from NASA to show the care they put into making rockets. Students learned about forces like thrust, air resistance, and friction and how those forces act on real rockets. Students had to work together to design a balloon rocket that had enough power to send it flying, but also ways to reduce air resistance by making their balloons aerodynamic. Students had to measure the time and distance the balloon traveled to calculate the speed.

Comparing Results and Making Improvements

After our project we looked at whose rocket was the fastest in class by comparing the average speed of each balloon. Students reflected on which designs worked the best and the common problems we ran into while building and testing the balloons.

簡介

太空探索賦予現代科學一些最重要的科學突破。從製造火箭到在國際太空站上進行實驗，太空旅行已經改變了我們對世界的看法。透過實驗，四年級學生已經開始了解如何使用火箭將人們送上太空的過程和挑戰。動力從哪來？我們需要克服什麼？什麼形狀和設計才是最好的火箭？

測試火箭！

首先，學生必須了解火箭上的作用力，透過觀看 NASA 影片，他們了解製造火箭的過程以及推力、空氣阻力和摩擦力如何作用於火箭上。學生必須共同設計出一種有足夠動力飛行的氣球火箭，找到氣球的空氣動力學特性來降低空氣阻力的方法，並測量氣球飛行的時間和距離以計算出速度。

比較結果與改進

專題完成後，透過氣球的平均速度比較誰的火箭是最快的。學生思考哪些設計效果最好，以及在製作和測試氣球時遇到的常見問題。

ASK + IMAGINE 提問 + 創思



Students studied real rockets to learn about the forces that make them work.
學生研究真實的火箭了解能量的來源。

CREATE 創作



Teams finally made the rockets they designed and attached it to a string to make sure it would fly straight.
小組製作他們設計的氣球火箭並綁上線以確保火箭直行前進。

COMMUNICATE 溝通



Time to record and share the results!
紀錄並分享結果！

PLAN 計畫

Thinking about the best way to make a balloon rocket was fun, and it took a lot of teamwork.
思考如何用最棒的方式製作火箭很有趣，也需要團隊合作。



IMPROVE 改進

Students looked at different designs to improve their own designs.
學生參考不同設計以改進自己的作品。

