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Crossing a Chasm
越過峽谷

Extension of Learning

In this project, students learned about bridges and some of the qualities of a strong bridge. The students had to expand upon what they learned previously in order to figure out how to get materials across a chasm when there is no bridge. Being innovative in unexpected situations is an important life skill. Students expanded their knowledge of forces and energy to invent a workable solution to an unusual problem.

Practical Application of Knowledge

The students learned more about potential and kinetic energy as well as what wind is and how wind could be used to power a cargo carrying device. They got practice using planning terminology as they went through the process of trying to think of ideas for devices that could travel a determined distance carrying a given amount of weight.

Reflection

The students tested their theory by seeing if their cargo carrier device could make its way from one side of the stools to the other. They realized that it is important to not only know that their cargo carrying device didn't work as expected but be able to figure out specifically *why* it didn't work so that they could make improvements to get the cargo across the chasm. Having the opportunity to think about and execute improvements helped the students to learn how to reflect on their device's outcome and their overall planning process.

延伸學習

此專題讓學生學習橋樑及堅固的橋樑必備的特性。學生延伸先前所學知識，了解如何在沒有橋樑的情況下越過峽谷。在突發情況下能產出創新的想法是一項重要的生活技能，學生延伸他們對力和能量的知識，為不尋常的問題找出可行的解決方案。

知識的實際應用

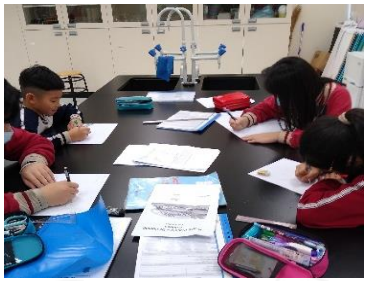
學生學習關於勢能和動能的知識、了解風是什麼、及如何利用風來提供貨物運輸的動力。學生在試圖想出能承載一定重量的裝置時，也同時練習使用相關術語進行規劃。

反思

學生測試他們的理論，看看載物裝置是否能在椅凳間傳輸。他們得知不僅要去了解為什麼載物裝置沒有如期運作，更要能夠找出具體原因，以加強裝置，使貨物通過峽谷。這讓學生有機會思考並進行改進，並學習如何反思裝置的結果和整體規劃過程。

1 ASK + IMAGINE 2
提問 + 創思

Students write down and share ideas for a wind powered device.
學生寫下並分享風力發電裝置的想法。



3 PLAN
計畫

Students finalize their blueprint for a wind powered device.
學生最終確定風力發電裝置的藍圖。

4 CREATE
創造

Students use the blueprint to build their device.
學生利用藍圖來建造裝置。

5 IMPROVE
改進

Students test the effectiveness of their device.
學生測試裝置的效能。

6 PRESENT
展現

Students use the test results to report the performance of their device and ways that their device could be improved.
學生運用測試結果來報告裝置的效能及改進方法。