

Bridging the Gap 建造橋樑

Purpose of Bridges

We explored what bridges are for and what they do, as well as the three main types of bridges. The students began this project with a quick lab to learn how various shapes withstand the forces of tension (pulling) and compression (squeezing). They learned what force is, in addition to being introduced to Newton's laws of motion. They looked at various bridge designs before choosing the type of bridge they wanted to make and drafting a design for their group.

Once the bridges were completed they were tested to see if their bridges were able to withstand a minimum of 2kgs. They used this data as well as other metrics to analyze the effectiveness of their bridges: both the execution, and the overall design. They also used the data to reflect on how they can improve upon their initial designs.

Application of Prior Learning

Through investigation students learned about the effects of force, they explored measurement and conversion by applying their knowledge of the metric system and showing their understanding of the design process to build and test their bridge. We are confident that the students will have a better appreciation of the importance of communication and planning.

Development of Soft Skills

In addition to learning how to work with the constraints of both time and materials, the students learned how to work as a team to solve problems. They had to designate roles and delegate tasks, as well as doing their best to ensure that each member of their team remained focused on the completion of the project.

橋樑的目的

學生們探討橋樑的用途及三種主要的橋樑類型，並在實驗中學習不同的橋樑如何承受張力（延伸）及壓力（擠壓）。他們除了學習牛頓運動定律外，還學會什麼是力，並透過觀察各種橋樑設計，選擇他們想要建造的類型，並規劃橋樑設計圖。

完成橋樑後，測試其是否能負重超過 2 公斤。他們利用數據分析橋樑的效能，包括執行及整體設計，並藉此思考如何改善最初的橋樑設計。

先備學習的應用

學生們藉由調查，了解力的影響，運用公制知識學習測量及換算，展現對建造和測試橋樑的設計過程。相信學生們能更知道溝通和計畫的重要性。

軟實力發展

除了學習如何運用有限的時間和資源工作外，學生還學到如何靠團隊合作來解決問題。他們必須分配角色及委派任務，並盡力確保團隊中的每個成員都專注在專題上。

1

ASK + IMAGINE
提問 + 創思

2

Students reviewing bridge related terminology.
學生複習橋樑相關的詞彙。



3

PLAN
計畫

4



Students working together to finalize a bridge design.
學生共同完成橋樑的設計。

4

CREATE
創造

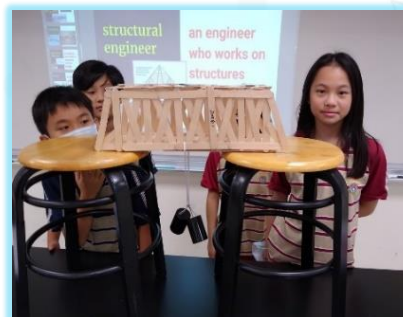


Students are working to construct a bridge based on their design.
學生依照小組的設計建造橋樑。

5

IMPROVE
改進

6



Students testing their bridge to determine if their construction was effective.
學生測試橋樑是否堅固。

6

PRESENT
展現



Students discussing ideas before writing the final report.
學生討論想法後撰寫專題報告。