

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 started this project with two inquiries - "How does tube shape affect strength?", and "Building a strong footing!". They learned about what a force is and how tension (pulling) and compression (squeezing) work in the different types of bridges. They also learned the effect thickness, length, and shape have on a bridge.

Task

The students then had to use the knowledge they gained through the inquiries and investigations, to design, create, and test the type of bridge their team had chosen. They first designed the bridge they thought would be the strongest, individually, and then the group chose the best one. Next, they gathered their material and built their bridges. After completing their bridge, it was time for testing. They did a strength test where they hung weights from the bridge. They added to the weight, until the bridge broke. Then they recorded the maximum weight their bridge could take.

Conclusion

The students enjoyed this hands-on project very much and highlighted their creativity in their designs. In addition to learning how the forces work, the students also learned how to work as a team to solve problems. The different managers delegated tasks to the group members and made sure that each member knew that their role was in completing the task.

橋樑的用途

我們探索了橋樑的用途和作用，以及三種主要的橋樑類型。學生們透過兩個問題開始研究這個專題——「管子形狀如何影響力量？」和「建立一個穩固的地基！」。他們學習力以及張力（拉力）和壓縮力（擠壓）如何在不同類型的橋樑中發揮作用。他們還了解了厚度、長度和形狀對橋樑的影響。

任務

學生們透過他們調查和提問所獲得的知識來設計、創建和測試團隊所選擇的橋樑類型。他們首先各自設計他們認為最堅固的橋樑，接著在小組中選擇最好的一個。接下來，他們收集材料並一起建造了橋樑。完成橋樑後，是時候進行測試了。他們在橋上懸掛重物來進行強度測試。他們不斷增加重量直到橋樑斷裂，並記錄下他們的橋樑可以承受的最大重量。

結論

學生們非常喜歡這個能親自動手做的專題，並在他們的設計中突顯出他們的創造力。除了學習力學是如何作用的，還學到如何與團隊合作一起解決問題。組長將任務委派給小組成員，並確認每個組員都知道他們的任務是一起完成專題。

1 ASK + IMAGINE 提問 + 創思



Students are building different tube shapes to test as footings for their bridges.
學生們正在建造不同形狀的管子進行測試，以作為橋樑的地基。

4 CREATE 創造



6 PRESENT 展現

Students communicating their results by writing their Final Reports.
學生透過撰寫他們的心得報告，交流他們的結果。

3 PLAN 計畫



Some of the students are busy designing their bridges.
有些學生忙著設計他們的橋樑。

Students are using their designs to create their bridges. Some other students are testing the strength of their bridges.
學生們使用他們的設計來創建他們的橋樑。其他人則負責測試橋樑的強度。

