

Electrical Circuits

電路板

Understanding Electricity

Students began by exploring how electrical circuits work, learning about current flow, the role of components such as wires, switches and bulbs, and how to interpret circuit diagrams. They investigated real-world problems related to electricity, including what causes power outages and how they affect daily life.

Circuit Building

To bring their understanding to life, students conducted hands-on experiments using bulbs, batteries, lemons, and pencil refills. They built simple, series, and parallel circuits, testing how different setups affected the flow of electricity. These experiments helped solidify their grasp of electrical concepts and gave them the confidence to begin creating their own systems.

Designing Solutions for the Community

With a solid foundation in circuitry, students were challenged to apply their knowledge to a real-world scenario. They designed and built model buildings for a community and created power sources to keep them running. Working like engineers, they considered practical needs, energy flow, and efficiency. Each project demonstrated how science and creativity can be combined to solve real-world problems and support community resilience.

理解電力

學生探討電路是如何運作，學習電流流動、像是電線、開關和燈泡等元件所扮演的角色，以及如何解讀電路圖。他們調查現實中與電力相關的問題，包括停電的原因以及停電如何影響日常生活。透過研究，他們發現像醫院這類重要服務，通常依賴備用系統，例如發電機或微電網，以便在停電期間保持運作。

電路搭建

為了讓學生的理解更具體，他們進行實際操作，使用燈泡、電池、檸檬和鉛筆筆芯。他們建構簡單的串聯和並聯電路，測試不同設置如何影響電流的流動。這些實驗幫助他們鞏固對電學概念的理解，並增強他們開始創建社區系統的信心。

為社區設計解決方案

在具備堅實的電路基礎後，學生挑戰將所學知識應用於現實情境中。他們為一個社區設計並建造模型建築，創建能源以保持社區運行。像工程師一樣工作，他們考慮實際需求、能量流動和效率。專題中展示科學與創意如何結合，解決現實問題並支持社區的發展。

1 ASK + IMAGINE 提問 + 創思

We are making batteries, light bulbs and exploring circuits.
我們製作電池、燈泡和探索電路板。



4 CREATE 創造

We built buildings with circuits inside them to power lights.
我們建造帶有電路的建築，讓燈光得以運行。



6 PRESENT 展現

We presented our circuit and building designs.
我們展示電路設計。

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3 PLAN 計畫

We made plans for reliable circuits to power our community.
我們為了讓社區提供可靠的電力系統，制定電路計劃。



5 IMPROVE 改進

Testing and improvements are made throughout the process.
過程中我們進行測試與改進。

