Power On

通電

Basic Circuits

Every circuit requires three fundamental components: a voltage source, a conductive pathway, and a load. The voltage source, exemplified by a battery, initiates the flow of current along the circuit, coursing through the pathway or wires and into a load, which utilizes the power provided. In this particular scenario, the load was represented by an LED light. In the early phases of the project, students engaged with elementary circuits via an interactive smartboard activity, before proceeding to experiment with connecting a battery, simple wires, and a lamp in an attempt to illuminate it.

Circuit Wand

The prospect of designing and crafting a Harry Potter-style wand that illuminates upon switch activation filled students with excitement as they prepared to put their knowledge into practice. This project served as a rigorous test of their capacity to meticulously follow detailed step-by-step instructions, demanding precision in the placement of copper tape and assembly of all components. Moreover, it presented an invaluable opportunity for students to deepen their comprehension of the iterative process of testing and refining, as initial attempts often yielded non-functional connections. Consequently, students persevered, identifying faults and iteratively improving their designs until successfully achieving the desired functionality of their wands.

基本電路

所有電路都需要具有三個基本元素：電壓源、導電路徑和負載。電壓源，例如電池需要電壓以使電流透過電線流過電路，並進入消耗電源的負載，LED 燈就是如此運作的。在專題的初始階段，開始嘗試連接電池、基本電線和燈來點亮燈泡前，學生透過用互動式電子白板設計的活動探索基本電路。

電路魔杖

學生得知他們需要創造一支哈利波特風格的魔杖來測試他們所學的知識時都非常興奮，他們啟動開關時，魔杖的尖端會亮起。這個專題真正測試學生按照詳細步驟與說明進行操作的能力，因為他們必須非常準確地放置銅箔膠帶並連接所有零件。此專題也為學生提供了一個更能瞭解測試過程和改進的機會，因為許多連接過程並不會第一次就成功，因此，他們必須尋找錯誤並重試，直到他們能夠點亮魔杖。

1 2 ASK + IMAGINE 提問 + 創思

We completed various activities to learn about and understand a simple circuit.
我們透過不同活動來了解基本電路。

3 PLAN 計畫

We looked at the material and discussed different ways to complete the task. It was important to be careful with the copper tape.
我們查看材料並討論以不同的方法完成任務。在使用銅箔膠帶時必須特別小心。

4 CREATE 創造

During the creation stage we assembled the wands and did multiple tests to troubleshoot any problems.
在創造階段，我們組裝魔杖並進行多次測試，以排除任何問題。

5 IMPROVE 改進

Success! It took a lot of patience and perseverance making the wand, we were ecstatic when the LED came on during testing.
成功了!製作魔杖非常需要耐心和毅力，當 LED 燈亮起時我們非常興奮。