

## Creating a Greener Cleaner 製作環保清潔劑

### Why a “Greener Cleaner”?

As we realize the consequences of human action on the environment, the need to raise children to be environmentally conscious grows. In our first project, students explored the effects of pollution on water ecosystems. Water pollution is a major issue in our world today and through this project, students were able to brainstorm ways we can lessen our impact on the environment. One of those ways is to create our own house hold products with environmentally safe, non-toxic ingredients.

### Time to Clean Green!

Our students learned about natural resources and conservation through hands-on learning. We began with a lab to explore how groundwater pollution can affect the quality of water. The topic culminated with a challenge where the students designed and made an environmentally friendly greener cleaner. They then tested their cleaners to determine how well it cleans and then brainstormed ways to redesign their mixtures based on their testing results.

### The Process

Students practiced valuable skills while working through this project. This project focused on designing, finding eco friendly solutions, teamwork, cooperation, mixing solutions, and problem solving. Students will find this plethora of skills useful for a variety of situation throughout their lives.

### 為什麼使用環保清潔劑？

隨著我們意識到人類行為對環境的影響，培育孩子的環保意識因應而生。在學生的第一個專題，他們探究了污染對水生生態系統的影響。水污染是全球的重大問題，透過此專題，學生集思廣益如何減輕環境污染的影響，其中一種方法即是用環保、安全且無毒的成分製作自己的家用產品。

### 用環保方式清潔吧！

學生透過實作了解自然資源和保育的知識。從實驗開始，我們探討地下水污染如何影響水質。此專題的挑戰在於學生需設計並製造出環保清潔劑。因此，他們測試清潔劑以確定清潔程度，並根據測試結果，重新設計成份。

### 製作過程

專題探究的過程中，學生練習了重要的技能。如：專題著重設計、尋找環保的解決方案、團隊合作、成份混合和問題解決等。學生會發現這些技能對他們生活中的各種情況都非常適用。

### 1 ASK + IMAGINE 提問 + 創思



Students got to see how pollution can make organisms grow more slowly or quickly. 學生們觀察污染如何影響有機體的生長速度。



Students decided which ingredients would best work in their cleaners. 學生決定哪種成分最適合他們的清潔劑。

### 3 PLAN 計畫



Students worked together to create a design for a green cleaner that works on dried mud. 學生共同設計出一種適用於乾泥土的環保清潔劑。

### 4 CREATE 創造



Students mixed ingredients to create a safe cleaning product. 學生混合成份，製成安全的清潔產品。

### 5 IMPROVE 改進



Students analyzed their results from cleaning and made changes to improve the effectiveness of their product. 學生分析清潔後的效果，並進行改良以提高產品的效力。

### 6 PRESENT 展現



Students shared their results with the class in a report. 學生與全班分享他們的成果報告。