

April, 2021

## Multi-Layered Water Filtration System

### 多層濾水器系統

#### Extension of Learning

Do you think the water you drink is clean? In this project, students learned about our water resources and all the elements that we need to remove from it before it is safe enough for us to drink. They also learned that all the major cities of the world have water purification plants that do this job for us. Then, students had to use their knowledge and creativity to design and build a multi-layered water filtration system to clean dirty water.

#### Practical Application of Knowledge

The students learned more about how the different layers need to be a specific size and texture to remove certain impurities. This way, students could get rid of all the different impurities to make the water safe for drinking. Students collaborated in length about what materials to use and in what order they needed to put the layers to be the most effective.

#### Reflection

The students then tested their theories to see what combination of materials and in what order these materials needed to be for the best result. Through these tests, they discovered the best combination and order of the materials for the best result. Through this project, the students rediscovered that the more you test something, the better your result will be.

#### 學習延伸

你認為你喝的水是乾淨的嗎？在這個專題中，學生學習到水資源以及在轉變成安全無虞的飲用水之前需要將水中部份元素移除，他們也了解到世界上所有大城市都有給水廠為我們淨化水源。在那之後，學生們需要運用所學以及創造力去設計並建造一個能淨化汙水的多層濾水器系統。

#### 知識應用

學生學到更多關於不同過濾層所需的特定尺寸及材質，才可除去特定的雜質，如此一來，他們可以過濾掉所有不同的雜質並將水轉化成安全的飲用水。學生協力討論需要哪些製作材料以及過濾器的放置順序以達到最大效用。

#### 反思

學生接著測試他們的理論，看哪些材料以及哪種放置順序能產生最好的效果，通過這些測試，他們找到獲得最佳效果的材料組合及放置順序。透過這個專題，學生再次發現，一項產品經過越多次的測試，得到的結果就越好。

#### ASK + IMAGINE 提問 + 創思

The students collaborate on which design would be best for their filters.  
學生合作討論哪個濾水器的設計最好。



#### CREATE 創作

Everyone is getting his or her hands dirty in creating their water filter.  
每位學生的手在創造濾水器的過程中都變髒了。



#### PLAN 計畫

This group is working together, planning and designing their filters.  
這組學生正在合作規畫並設計他們的濾水器。



#### IMPROVE 改進

Working hard to improve on their designs.  
學生正努力改善他們的設計。



#### 6 PRESENT 展現

At the end, the students presented their findings in a well-written report.  
最後，學生精心撰寫書面報告來發表他們的發現。