

Building a Water Filtration System

建構濾水器系統

Water Treatment Systems

Is the water that you drink clean, or do you use a filter in your house? During this project, students learned about our water resources and all the pollutants that we need to remove from it before it is safe enough for us to drink. They also learned how water purification plants work and the steps water goes through before it reaches our homes. Students had to use this information and think critically to design and build a multi-layered water filtration system to clean dirty water.

Designing and Testing a Water Filtration System

The students learned about how different sands, rocks, charcoal, and chemicals are layered in specific orders and sizes to remove certain impurities. By doing this, students were able to get rid of most of the different impurities to make the water safe for drinking. Students collaborated in depth 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 ideas and designs to see what combination of materials and in what order these materials needed to be for the best result. Students were limited to selecting five out of eight materials. Through these tests, they discovered the best combination and order of the materials in order to achieve the best result. Through this project, the students rediscovered that the more you test something, the better your result will be.

水處理系統

你喝的水乾淨嗎？還是你家裡有使用過濾器？在此專題中，學生瞭解我們的水資源，以及水在能夠安全飲用前，還需要從水資源中去除的所有污染物，並瞭解到水從淨水廠到家裡的運作及淨水過程。學生必須利用這些訊息和創意來設計和建構多層過濾系統以淨化髒水。

濾水器系統的設計與測試

學生學習不同的沙子、岩石、木炭和化學製品是如何分層的，並按照特定的順序和大小去除某些雜質。如此一來，才能夠去除大部分不同的雜質，使人安心的喝水。學生透過合作並深入探討使用什麼材料、按照什麼順序排列，才能達到最好的效果。

反思

接著，學生測試他們的想法和設計，以了解需要什麼樣的材料來組合，以及這些材料應如何順序才能獲得最佳效果。學生需從八種材料中選擇五種材料，透過測試，他們發現了材料的最佳組合和順序以獲得最佳的濾水結果。透過這項專題，學生再次發現測試的越多，結果就越好。

1 ASK + IMAGINE 提問 + 創思



Students took notes on the water filtration process and how water treatment plants work.

學生們做了濾水過程和淨水廠運作的筆記。

4 CREATE 創造



Students observed test results from the available materials. They then selected the materials they wanted to use based on their observations.

學生們觀察測試結果，並挑選他們想要用來過濾的材料。

6 PRESENT 展現

Students reflected on and presented their findings to the class.

學生反思並向全班同學報告他們的發現。

3 PLAN 計畫



Students observed the dirty water they needed to filter and identified the various particles that required removal.

學生們觀察髒水並辨認其中需要被過濾的物質。

5 IMPROVE 改進



After testing their filters, students were given the opportunity to redesign their filters for optimized results.

測試過濾水器後，學生們可以再作調整。

