

Breath of Life 人類的呼吸



Spirometer project

What would it be like to live in space? Imagine floating from room to room, looking out your window and seeing the Earth below you. But how would you breathe? There is no air in space and people cannot live without air.

Investigate

The Spirometer project enabled students to learn more about the respiratory system through hands-on learning and inquiry. Students had to investigate their pulse and breathing rates at rest and during exercise in order to determine what their bodies would need for an imaginary two-day journey in space.

Survival needs

These concrete experiences with breathing rates helped students to apply their mathematical skills as they calculated the amount of air needed over different lengths of time. The project culminated with students having to design and build a spirometer. Through these activities, students developed a better understanding of the needs of humans on earth and in space and discovered some of the rigors of the life of an astronaut.

肺活量計專題

在太空中生活會是什麼樣子？想像從一間房間飄到另外一間，望向窗外是地球在你腳下的景象。但你要怎麼呼吸？人們不能生活在沒有空氣的太空中。

調查

肺活量計專題讓學生透過實作和探究，學習呼吸系統。學生分別在休息及運動狀態下測量脈搏及呼吸頻率，以確定人類在兩天的太空之旅需要多少空氣。

生存需求

這些與呼吸頻率有關的實際經驗，幫助學生應用數學技巧計算出不同時段所需的空氣量。在這個專題的最後，學生必須設計及製造一個肺活量計。透過這些活動，學生更了解人類在地球上和太空中的需求，並發現太空人生活上的不便。



ASK + IMAGINE
提問 + 創思



How are we going to measure the volume of air in 1 breath?
我們要如何測量呼吸一次的空氣量？



COMMUNICATE
溝通

Finally, we applied some math to calculate the volume of air.
最後，我們應用數學計算空氣量。



PLAN
計畫

Each line represented 250 ml of displaced water.
每條線代表 250 毫升的排水量。



CREATE
創作

We took a regular breath and released air into the bottle.
我們正常吸氣並在瓶中吐氣。

