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The Wind is Coming
起風了

Renewable Energy

Wind turbines work on a simple principle: instead of using electricity to make wind—like a fan—wind turbines use wind to make electricity. Wind turns the propeller-like blades of a turbine around a rotor, which spins a generator, which creates electricity. As we look towards a more sustainable future along with a booming wind turbine industry in Taiwan it was fascinating for the students to discover Taiwan's prominent role in implementing this technology.

Wind Turbines

During the early stages, the students learned about wind and where wind comes from. This knowledge was tied into why certain locations are good for turbines and others might not be. The students asked many questions about why the turbines are build offshore and how they survive storms.

Once the foundation was laid we challenged the students to plan and design their own turbine with the added incentive to see which one can rotate the fastest and remain stable while rotating in its base. The base was representative of the "Jacket" style used around the Taiwan coast. We focused on the design of the blades introduced several different options for the groups to plan and construct a propeller that will meet the criteria. The best part was testing the turbines to see the blades spin. Students were able to make adjustments to their designs after testing to make improvements where needed.

可再生能源

風力渦輪機的運作原理很簡單：它不像風扇一樣利用電製造風，而是利用風製造電。風推動渦輪的螺旋葉片轉動，帶動發電機並產生電能。當我們展望更永續性的未來，以及臺灣蓬勃發展的風力渦輪機產業時，學生發現臺灣的這項科技其實非常突出。

風力渦輪機

在專題初期，學生學習風及風的來源，這些知識跟渦輪機適合放置的地點密切相關。學生問了許多問題，如為什麼要在近海建造渦輪機及其如何抵擋暴風雨等。

建立基礎知識後，老師要求學生計畫並設計自己的渦輪機，且測試哪一個渦輪機在底座旋轉時轉速最快且穩定。此底座代表臺灣沿海渦輪機使用的「套筒式」底座。老師著重介紹葉片的設計，並介紹不同的種類，使學生能規劃和建造符合標準的螺旋葉片。最棒的是測試渦輪機的階段，學生可以觀察葉片旋轉，並在測試後對自己的設計進行調整及改進。

1 ASK + IMAGINE 提問 + 創思 2

Folding pinwheels to help us understand wind direction and where the wind comes from.

摺紙風車可以幫助我們了解風的方向及來源。

3 PLAN 計畫

Exploring different blade designs from two to six propellers to see which will spin the best.

探索不同數量的螺旋葉片設計，觀察哪一種轉速最快。

4 CREATE 創造

It was important to design a stable base to hold the blades securely during testing; we used different wind speeds on the turbines.

在設計過程中，最重要的是設計一個穩定的底座穩住葉片；我們在不同風速下測試渦輪機。

5 IMPROVE 改進

We made our designs with colors and patterns for better visual effects.

我們畫上顏色及圖案讓風力渦輪機更加美觀。