

Gravity 地心引力

Understanding Gravity

Gravity, or gravitation, is a natural phenomenon by which all things with mass or energy—including planets, stars, galaxies, and even light—are brought toward one another. On Earth gravity gives weight to physical objects.

Center of Gravity

Center of gravity, that point in a body or system around which its mass or weight is evenly distributed or balanced and through which the force of gravity acts. Leading up to this particular project, the learners had to perform several physical activities to understand the meaning of center of gravity. These activities included balancing, jumping and pretending that we were gymnasts walking on a beam. Once students got the hang of it they were instructed to figure out how to carefully balance a craft stick on a chopstick.

To be able to manage this task, students had to make subtle adjustments to the pipe cleaner's position on both sides to achieve balance. After they succeeded in balancing a craft stick, they were able to substitute the pipe cleaner and the clothespins with other materials to see the differences. The students were amazed at the differences in gravity between the earth, moon and Jupiter and got a better understanding of how this mysterious force works.

了解地心引力

地心引力是一種自然現象。所有具有質量或是能量的事物，包含行星、恆星、星系，甚至是光都相互吸引。在地球上，地心引力賦予物體重量。

重心

重心是物體或系統的質量或重量平均分佈或平衡的作用點。開始進行此項專題時，學生必須進行幾次的體能活動以了解重心為何。這些活動包含平衡、跳躍以及假裝體操人員在平衡木上行走。學生一旦掌握了訣竅，他們思考如何小心地平衡筷子上的冰棒棍。

為了能夠完成此任務，學生必須對兩側的毛根作出微調以達到平衡。當學生完成冰棒棍平衡時，他們將使用其他的材料替代毛根以及木夾，從而觀察其中的變化。學生對地球、月球和木星之間的引力差異感到驚訝，並且對於這個神祕力量的運作方式有更進一步的理解。

1 ASK + IMAGINE 提問 + 創思

We performed various gravity drop tests to see and understand how gravity works on different objects.

我們進行了各種地心引力測試並且從中了解重力如何作用於不同的物體。



3 PLAN 計畫



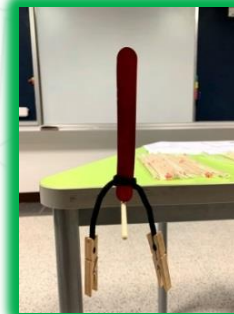
We came up with a clever idea to learn about balance and center of gravity when we designed our stick man.

當設計火柴人時，我們產出一個聰明的想法，使我們了解平衡和重心。

4 CREATE 創造

Balancing the craft stick and finding the center of gravity was quite challenging.

平衡冰棒棍並找到重心很具有挑戰性。



5 IMPROVE 改進

Making subtle adjustments to our stick man enabled us to balance it on the chopstick.

我們進行火柴人的微調，使它能在筷子上保持平衡。

