



快、狠、準-『瓶』安無事

Quick、Sharp、Steady

— Bottle Balance Challenge

一、活動旨趣Purpose

利用小學自然領域課程中，五年級(力與運動)單元的特性，經由學生實際參與的過程，讓學生也能夠了解在現實生活中，坐在靜止的車上，車子突然開動，人或物品會向後傾；靜置在桌上的物品，如果沒有任何外力去推它，物品會一直保持靜止的狀態。

In the fifth-grade science unit on 'Force and Motion,' the lesson can be designed to utilize hands-on student participation. Through these activities, students can better understand real-life examples of inertia: when sitting in a stationary car that suddenly starts, people or objects appear to lean backward; and when an object rests on a table, it will remain at rest unless an external force acts upon it.



二、活動器材Materials

礦泉水瓶子數個、木條(積木)數個

Several mineral water bottles, several wooden sticks (building blocks).



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三、活動過程(或製作過程) Processes

1. 將水瓶倒立在木條上，在不碰水瓶與水瓶不倒的情況下，將木條取出。

Place a water bottle upside down on a wooden stick. Without touching the bottle and without letting it fall, remove the stick.

2. 仔細觀察取出木條後，水瓶是不是一樣保持靜止的狀態呢？

Carefully observe whether the water bottle stays at rest after the stick is removed.

3. 生活中還有哪些小遊戲也有慣性作用呢？

What other little games in daily life also involve the effect of inertia?

四、原理探討Principles

1. 慣性是物體保有原來運動狀態的特性；原本靜止的物體，會保持靜止；原本在運動的物體會繼續保持等速度運動。慣性大者，難動也難停；慣性小者，易動也易停。

Inertia means that things like to stay the way they are. If something is not moving, it will stay still. If something is moving, it will keep moving the same way unless something stops it. An object with greater inertia is hard to start and hard to stop; an object with smaller inertia is easy to start and easy to stop.

2. 在快速抽取木條的過程中，由於慣性作用的關係，原本倒立靜止在木條上的水瓶，會保持靜止不動在桌上，不會倒下。

In this game, when you quickly pull out the wooden stick, the water bottle standing upside down on it will stay in place because of inertia. It will not fall over right away, but stay on the table.

3. 如果水瓶容易倒下，需把握『快、狠、準』這個技巧，這樣就比較容易成功喔！

If the water bottle is easy to fall down, remember this tip: Be quick, sharp, and steady. That way, you will have a better chance of success!