

## SPH3U – Inertia P.E.O.E.

### Teacher Guide

*It is suggested that both demos are performed before facilitating a class discussion to take up the P.E.O.E. activity and introduce Newton's First Law of motion. Alternatively, only one demo can be chosen to be shown.*

### Demo 1 – The Penny, the Playing Card and the Beaker.

#### **Materials/ Resources Required**

- One penny, or other small coin
- One beaker
- One playing card
- P.E.O.E. charts for students

#### **Instructions**

1. Place the playing card flat over the mouth of a beaker.
2. Place the penny, or other small coin flat on top of the card.
3. Explain to students that you will flick the card horizontally from the top of the beaker, and have them fill out the “Predict” and “Explain” boxes in the *before the experiment* section of the P.E.O.E. chart.
4. Quickly flick the playing card, horizontally from the top of the beaker while students observe.
5. Have students fill in the “Observe” and “Explain” boxes in the *after the experiment* section of the P.E.O.E. chart.

### Demo 2 – Whack a Stack

#### **Materials/Resources Required**

- Four to five wooden blocks, identical in size such as ends of a 2 x 4 cut to identical lengths, or Jenga blocks
- A wooden ruler, small piece of PVC pipe, or other material that can be used to whack a block individually
- P.E.O.E. charts for students

#### **Instructions**

1. Lay the identically sized wooden blocks, one on top of each other
2. Explain to students that you will quickly whack the bottom block from the pile using the ruler, and have them fill out the “Predict” and “Explain” boxes in the *before the experiment* section of the P.E.O.E. chart.
3. Quickly strike the bottom block in the pile horizontally.
4. Repeat Step 3 until only the top block remains.
5. Have students fill in the “Observe” and “Explain” boxes in the *after the experiment* section of the P.E.O.E. chart

#### Additional Resources:

*Beaker, Penny, Playing Card Video* - <https://www.youtube.com/watch?v=If83GxyIGTk>

*Whack a Stack Video* - <https://www.youtube.com/watch?v=K4bnp7rSIgo>

*Egg Drop Inertia Challenge (if you're feeling adventurous!)* - <https://www.youtube.com/watch?v=6gzCeXDhUAA>

**N.B.** – the Egg Drop Inertia Challenge can be substituted for the Beaker, Penny, Playing Card demo if desired.

**P.E.O.E. – Inertia Student Worksheet**

**The Penny, the Playing Card, and the Beaker**

|                            |         |
|----------------------------|---------|
| Before<br><i>(diagram)</i> | Predict |
|                            | Explain |
| After<br><i>(diagram)</i>  | Predict |
|                            | Explain |

## Whack a Stack

|                            |         |
|----------------------------|---------|
| Before<br><i>(diagram)</i> | Predict |
|                            | Explain |
| After<br><i>(diagram)</i>  | Predict |
|                            | Explain |