SUITE SCIENCE

BEAUTIFUL BERNOUILLI!

CLASS: 1st– 4th | 30 mins | SESE (SCIENCE)

Learning Objectives - WALT (We are learning to…)

1. Investigate how forces act on objects
2. Explore how objects may be moved by pushing and pulling
3. Explore how moving air can make things move

Curriculum links Science

- **Energy and Forces** – Pushing, pulling, air movement
- **Engineering** – How planes fly

Breakdown:

Welcoming Class	*5 mins*	Finding space and settling
Theory	*5 mins*	Theory of experiment
Experiments	*20 mins*	Hands-on activity

Equipment and Important Notes for Tutors:

- Hairdryer
- Pingpong ball
- Power
- Balloons
- Small coin
- Leaf Blower
- Light football

Safety

- Be careful of the children around leaf blowers.
- Do not do Malteser challenge in lab

Make sure to incorporate the scientific learning process throughout this experiment. Establishing a sense of familiarity with the students on these will improve their scientific thinking as well as instilling the framework of future lessons. Remember to ask trigger questions and be inclusive. If children ask questions you do not know the answer to, **it is ok to say you don't know,** as it will show the children that science is about chasing the unknown and make them feel more at ease with you.
Theory and experiments will also overlap throughout the demonstration and it is important to remember to narrate through activities.

Introduction:
Here we will be introducing the children to **Bernoulli's Principle,** which states that if the velocity of a fluid increases, the pressure decreases. We can see this with the wings of airplanes. The sloped shape allows the air above the wing moves faster than the air below, meaning there is lower air pressure above the wings, causing the aircraft to be pushed upwards by the higher pressure below. We will demonstrate how we can use air pressure differences to lift things up. It may be a difficult concept for some children to grasp but is an exciting and engaging demonstration.

Experiment:

Set up: 5 mins
Have the children gather around and settle.

Theory: 5 mins
Explain to the children they are going to learn how things fly. Use a sheet of paper and ask them to **predict** what will happen if you blow along the top of it. It will rise up! This is because the air on top is moving faster and so has lower pressure than the air below, which causes the page to lift. This effect is what causes a plane to fly. Tell the children we are going to be flying something way more exciting than a plane…..a ping-pong ball! Make sure to ask them what shape it is (sphere) as recognizing 3D shapes is important in Maths.

Activity: 20 mins
Take out the hairdryer and the ping-pong ball, hand them each to two different volunteers. Ask the children to switch it on and try and see if they can suspend the ball in the flow of air from the dyer. Explain that as air moves over a surface the lower the pressure that area has. The faster that air is moving the lower the pressure so if you have really fast air coming out of a hairdryer it traps the ping-pong ball in a kind of air pocket and keeps it there. You are even able to gently tilt the dryer from side to side whilst maintaining the ball in the air. The next level is to add a balloon with a coin in it into the flow. And an EVEN BIGGER challenge is to do the experiment with a leaf blower and football!

Send the children home with a chocolaty challenge!
Kids have to try to mimic the Ping-Pong ball and hair dryer by lying on their back on one of the benches with a Malteser on their lips. Their challenge is to blow the Malteser up into the air and catch in again in their mouth – success = prize!

REFER BACK TO YOUR **WALT** GOALS AND HAVE THE CHILDREN SHARE WHAT THEY LEARNED TODAY AS WELL AS RECAPPING ON ANYTHING THEY MISSED!

Fondúireacht Eolaíochta Éireann
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For what's next

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