



1 Hour Pre-Visit Lesson Plan

LLECHWEDD

Date:

Years 3-6

Teacher:

Lesson Objectives

- To excite the children about their trip
- To explore the following principles ahead of the trip.
- Forces are pushes and pulls
- Forces can cause objects to move, stop, speed up, slow down, change direction and change shape
- Gravity pulls objects towards the centre of the Earth
- Friction (including air resistance) slows moving things down
- To work collaboratively
- To reflect on our collaborative learning

Starter Activities

10 mins

- PowerPoint: Show the children Slides 1- 2 and click on the link. Explain that they will be visiting Zip World Llechwedd where they will be having a bounce on a net adventure playground as well as touring round the old slate mine. Spend time navigating the website and watching the videos.
- Slide 3: Explain that to help us understand how the attractions at Zip World work, we will be spending our lesson trying to understand forces. Ascertain from the children that all forces are pushes and pulls.

Main Activity

35 mins

- Explain that the children will be doing an activity on each table and the lesson will work as a carousel. They will have approximately 5 minutes at each table and will move tables in a clockwise direction on your command/ bell. Depending on time, they may or may not have a turn at each table. Choose small, mixed ability groups (group size will depend on how many activities you choose to use).
- The aim of these activities is to encourage discussion, problem solving and collaboration. The teacher, whose role is a facilitator, can float, prompting discussions where necessary.
- Slides 4 - 5: Chat to the children before they start about how best to approach the activities and how to listen and communicate effectively with their group. If they don't finish a task, it doesn't matter – the conversations they have are what counts.
- Slide 6: Give out role cards to each group (Worksheet 1). These can be changed around at each table so that everyone has a turn at something if they wish. Discuss the roles.
- Put out the activity cards (Worksheet 2), one on each table (select the best ones for your class, according to time, group size and age group, leaving out those not needed).
- Activity 1: a selection of push and pull toys around the classroom will help but are not necessary. Activity for Years 3 and 4 children only.



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Main Activity cont.		<ul style="list-style-type: none"> • Activity 2: place any items out on table to show forces can make an object move, stop, speed up, slow down, change direction and change shape (such as a toy car, ball, spring, plasticine or stretchy toy, parachute toy or similar). • Activity 3: provide two similar sized objects, one smooth, one rough such as a rubber and a plastic pencil sharpener. Establish that rougher surfaces have more friction. • Activity 4: Encourage children to use their imaginations and experiences to think of ways we can avoid falling to the ground (exerting a force in the opposite direction such as using upthrust to stay afloat in water, or air resistance to stay up in the air or supporting ourselves on strong objects that exert an opposite force equal to our weight or even using springs/elastic materials to spring us upwards, as at Zip World). • Activity 5: Children may discuss gravity and a pushing force, as well as air resistance and friction pushing back. They may consider smooth clothing, smooth materials for the slide or even adding water to reduce friction and make for a faster slide! • Activity 6: Years 5 and 6: Encourage the children to talk to each other about the idea of a reaction force. More confident children may consider this where no movement is involved. • Activity 7: Lay out a range of different materials/objects on the table; stretchy toys, springs, clothing, rubber bands, balloons etc. and non-elastic materials such as plasticine etc. Encourage more confident children to begin thinking about the idea of energy being stored in these elastic materials.
Extension Work	-	<ul style="list-style-type: none"> • Each activity card has an extension idea on it.
Plenary	15 mins	<ul style="list-style-type: none"> • Bring the class together. Ask a volunteer in each group to present what they discussed and learned at one of the tables. Was there anything you were unsure of? Can anyone else help them with this? Together, discuss the concepts that arise, ironing out any misconceptions. Use Slides 7 – 12 to aid presentations. • Does anyone in your group need congratulating for good team work or leadership skills? Encourage children to nominate those who listened carefully/participated well etc. Discuss that how they learned today was as important as what they learned.
AfL	-	<ul style="list-style-type: none"> • If you would like groups to record their findings, give each group Worksheet 3. • If you would simply like students to record one thing they have learned from each activity, give groups or students Worksheet 4 to complete. • Encourage students to look at the number activity they are on and only complete the part of the worksheet related to their activity (they won't be completing them in order!). • Assessment through: Observing their ability to work well in their group, contributions to discussion, written work and verbal responses to questions.



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Key Skills	-	Collaboration, communication, problem solving, leadership, reflection.
Key Words	-	Push, pull, force, gravity, friction, air resistance, elasticity, reaction force.
Differentiation and Success Criteria	-	<p>Group children in mixed ability groupings to encourage peer support. To help less confident children or lower age groups, put 'help' words on the board (gravity, air resistance, friction, pushing force, upward force) or in 'hint envelopes' on the appropriate tables.</p> <p>Encourage more confident children to consider the effects of forces on stationary objects.</p> <p>All children will know that a force is a push or a pull and that gravity pulls objects towards the ground. They will be aware of the skills required in collaborative learning.</p> <p>Most children will understand that there are different types of force, including gravity and friction, and that they can affect an object by speeding it up, slowing it down, starting or stopping movement or changing its direction or shape. They will understand how to work collaboratively and will display some of the skills needed. They may reflect on how well they worked.</p> <p>Some children will understand that forces are acting even on stationary objects and that forces work in pairs (action and reaction). They will work collaboratively, listening to others and showing a leadership role by helping others to work in the same way. They will reflect on ways to improve this.</p>
Resources/ Preparation Needed	-	<ul style="list-style-type: none"> • PowerPoint • For carousel – any of the following or similar - spring, ball, toy car, plasticine, push and pull toys around the classroom if needed, a rubber and a similar sized smooth plastic pencil sharpener (or similar), range of elastic and non-elastic materials and objects (balloons, rubber bands, stretchy toys, springs etc.). • Activity sheet 1 – role cards for each group, cut out and printed on card if possible. • Activity sheet 2 – print activity cards – enough for one per table • Either Activity sheet 3 or 4 if written work is required – print one per group (or child) as needed

Note: Please amend PowerPoint and Activity Sheets to suit your cohort and year group.

