



1 Hour Pre-Visit Lesson Plan

LLECHWEDD

Date:

Years 7 - 9

Teacher:

Lesson Objectives		<ul style="list-style-type: none">• To excite the students about their trip• To revise or introduce the following (depending on year group and previous knowledge)<ul style="list-style-type: none">- Energy gives the ability to do work- Energy can be transferred or stored; it is always conserved- Kinetic energy is the energy of motion and potential energy is stored energy- Simple machines can make work easier- Forces can be shown using arrows
Starter Activities	10 mins	<ul style="list-style-type: none">• PowerPoint: Show the students 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 the amazing net adventure playground as well as touring down below the ground through the old slate mine. Spend time navigating the website and watching the videos.• Explain that to help us understand what will be happening during their trip, we will first need to make sure we understand energy. What is energy? Give students time to discuss in pairs and come up with a scientific definition before sharing ideas and discussing as a class. Slide 3.
Main Activity	40 mins	<ul style="list-style-type: none">• Explain that the students 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 (your group size will depend on how many activities/tables you choose from the selection.)• The aim of these activities is to encourage discussion, collaboration and problem solving. The teacher, whose role is a facilitator, can float, prompting discussions where necessary.• Slides 4 - 5: If needed, chat to the students 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: If appropriate for your cohort, give each student a role card (Worksheet 1) to encourage full participation from all group members.



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Main Activity cont.		<ul style="list-style-type: none"> • 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). • Encourage students to look at the number activity they are on and only complete the part of the worksheet related to their activity (they might not be completing them in order!). o Activity 1: Students must work out the energy types. o Activity 2: Students must match the energy store to the correct definition. o Activity 3: Students must discuss pictures with examples of energy transfers and stores – no written work. o Activity 4: Together the group must try and build a simple catapult capable of projecting a lightweight item (such as a mini marshmallow) across the table. You will need approximately 10 lolly sticks (per group if you want each to be kept for the plenary) and rubber bands. As time is tight, you may wish to help this group's discussions along/put hints on the board about levers etc. o Activity 5: Students must discuss and then annotate pictures showing objects/people with gravitational potential energy. o Activity 6: Forces – students must label pictures using arrows. o Activity 7: Work done and simple machines – students are to create a list of all the simple machines they can see in and around the classroom. If this is limited, encourage them to think about those they might find around the rest of the school or at home.
Extension Work	-	<ul style="list-style-type: none"> • Each activity card has an extension idea on it.
Plenary	10 mins	<ul style="list-style-type: none"> • Slide 7: Bring the class together. Ask a volunteer from each group to present what they discussed and learned at one of the tables. Who was successful in building a catapult?! Discuss the scientific concepts needed – knowledge of elastic potential energy as well as the simple machine. Was there anything you were unsure of at any of the tables? Can anyone else help them with this? Together, discuss the concepts that arise, ironing out any misconceptions. Use Slides 8 – 11 to aid presentations. • Slide 12: Encourage the students to use what they have learned/revised today during their trip and make sure they consider the forces and energy transfers needed to get them moving while they are at Zip World.



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AfL	-	<ul style="list-style-type: none"> Observing their ability to work well in their group, contributions to discussion, written work and verbal responses to questions.
Key Skills	-	Collaboration, communication, problem solving
Key Words	-	Force, gravity, friction, air resistance/drag, motion, balanced, unbalanced, contact force, tension, compression, energy, gravitational potential energy, elastic potential energy, chemical potential energy, kinetic energy, work done, simple machines, lever, incline, pulley, wheel and axle, wedges, screw.
Differentiation and Success Criteria	-	<p>Group students in mixed ability groupings to provide peer support. Offer more guidance and focus on practical examples for lower ability students. Put hints (necessary vocab etc.) on the board if needed. Encourage more able students to move on to extension ideas.</p> <ul style="list-style-type: none"> All students will know: energy gives the ability to do work; it can be transferred between different types or stored; simple machines can make work easier; forces can be shown using arrows. Most children will understand that energy is always conserved; that kinetic energy is the energy of motion and potential energy is stored energy. Some children will be able to give a detailed explanation of a transfer of energy from one store to another.
Resources/ Preparation Needed	-	<ul style="list-style-type: none"> PowerPoint Worksheet 1 cut up per group Worksheet 2 printed once Worksheet 3 one per group Rubber bands Minimum of 10 lolly sticks (per group if you would like to keep their designs) Mini marshmallows (or similar depending on school policy)
Evaluation	-	For teacher to complete:

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

Safety Notes: Ensure there is enough space for the catapult to fire safely.

For hygiene reasons, a marshmallow per group is recommended. Please find an alternative if this should not be allowed under school policy.