

# POWER FOR EVERYONE EVERYWHERE WORKSHOP SUMMARY



## OBJECTIVE OVERVIEW

PUPIL LEARNING OBJECTIVE	PRIMARY ACTIVITY	SECONDARY ACTIVITY
Understand the importance of electricity and that access to electricity is not equal.	Starter, access mind map	Starter, case studies card sort
Describe the role of an engineer in bringing about access to electricity.	Class discussion, power resources	Class discussion, power resources
Consider the challenges engineers face to give people around the world access to electricity.	Reflection string activity	Reflection scenario activity
Design your own model wind turbine.	Plan, build and test	Plan, build and test

TEACHER EDUCATIONAL OBJECTIVE	WHEN/ HOW
Incorporate global issues in the classroom.	Case study discussion and reflection activities. Highlight that issues occur globally, in urban and rural areas.
Provide careers related learning within subject lessons.	Throughout workshop emphasise the knowledge and transferable skills engineers need. Relate this to subject learning.
Hands-on activity that develops the pupils' ability to use cross curricular knowledge and skills, and work as a team.	Build activity encourages detailed planning, collaborative working to build the model turbine and evaluative skills to understand and improve model performance.

## KEYWORDS

KEYWORD	DEFINITION
Reliable (electricity)	Constant supply at a useful power
Clean (electricity)	Made from non-harmful resources/resources that are quickly replaced
Manual labour	Physical work done by people
Power resource	Energy store that allows us to make generate/make electricity
Energy consumption	How much energy is used
Sustainable	Able to be maintained over a period of time



## ACTIVITIES AND RESOURCES

Activity summary	Support/Challenge	Resources
<b>STARTER (5 MIN)</b>		
Use the starter question to settle pupils after the ambassador introduction and description of Engineers Without Borders UK. Instruct pupils to discuss the answers or give written responses.	Visual aids on the board. Ask pupils to go through their day highlighting when they use electricity.	Slide 5 Paper (optional)
<b>ACCESS ISSUES (10 MIN)</b>		
<b>PRIMARY:</b> Mind map what it is like not have access. Wimbe case study discussion. <b>SECONDARY:</b> Case study card sort group work. Pupils match location, issue and solution for three case studies.	Pupils consider the long-term impacts to lack of access to electricity.	Access worksheet  Case study cards
<b>THE ROLE OF ENGINEERS (10 MIN)</b>		
<b>PRIMARY</b> Class discussion to introduce different power resources. Pupils sort the resources into renewable and non-renewable. <b>SECONDARY</b> Class discussion to introduce different power resources. Pupils group the resources and discuss the importance of renewable resources.	Renewable and non-renewable definitions.  Pupils consider the reliability of different resources.	Paper (optional)
<b>REFLECTION ACTIVITY (10 MIN)</b>		
<b>PRIMARY</b> Use volunteers to represent energy resources and populations. Using a string to represent an electricity distribution system, discuss the challenges engineers face when providing access to everyone and ask pupils to reflect on the impact these challenges can have. <b>SECONDARY:</b> Split the class into groups and give each group a scenario card that introduces a challenge to providing electricity access. Pupils discuss the impact and factors they would consider as engineers tackling this challenge.	Use questions to draw out pupil reflections.  Pupils can consider possible solutions that may fit the context of the situation, after analysing contextual factors.	String, scissors, cards  Scenario cards
<b>BUILDING A WIND TURBINE (35 MIN)</b>		
Explain the principles of turbine blade design and introduce the materials pupils have to build with. In groups, pupils design their turbine by drawing an annotated sketch, then build the designs. Pupils test the performance of their turbine and complete the evaluation section of their worksheet.	Remind pupils of the principles of turbine blade design when designing and building.	Build activity worksheet, build materials, turbine stand and hairdryer
<b>FEEDBACK (5 MIN)</b>		
Pupils write down things they enjoyed and did not enjoy and what they feel they have learned from the workshop.  Teachers fill in post workshop feedback form.	Give pupils instructions on what to write: I enjoyed... I didn't enjoy... I learned that....	Sticky notes  Feedback form