

LESSON NAME: Renewable Energy: Solar Energy



PREP

- A3 or A4 Poster Paper
- A3 or A4 Graph paper
- Minecraft Education App
- One to two devices per team with the Minecraft Education app installed and ready for use

VOCABULARY

- Renewable Energy
- Solar Power
- Direct Current (DC)
- Alternating Current (AC)
- Solar/Photovoltaic panels

RESOURCES

- [How do Solar Panels Work](#) (Web Page)
- [Solar Power 101](#) (YouTube)

CURRICULUM OBJECTIVES

Curriculum for Wales: Areas of Learning Experience Progression Steps 2 & 3:

- Science and Technology: Design thinking and engineering offer technical and creative ways to meet society's needs and wants
- Languages, Literacy and Communication: Expressing ourselves through languages is key to communication
- Humanities: Enquires, exploration and investigation inspire curiosity about the world, its past, present and future

DCF:

- Citizenship (online behaviour)
- Interacting & Collaborating (teamwork)
- Producing (constructions)
- Data/Comp. Thinking (problem solving & debugging)

LNF:

- Oracy across the curriculum
- Using measuring skills
- Using data skills

ALN:

- Break processes, text and spoken language down into small steps
- Ensure that key concepts and vocabulary are revisited and reused

LET'S GET STARTED

- What is renewable energy?
- Why is solar energy considered a renewable energy?
- Break students into teams of three (four maximum) - Let's look at the roles you will take on for the activity today? (Show role definitions) Decide who will be doing what when we go to over the activity for today?
- Check for understanding and move on to the Discover portion of the lesson

DISCOVER

Teacher Note: Use a strict time limit of between 20 - 25 minutes to complete the following task(s).

1. Work in teams of three (four maximum) with students taking on the following roles: a. Renewable Energy Expert b. Renewable Construction Expert c. Renewable Energy Designer
2. Using the web pages and YouTube video (See Resources section) teams will create a Mind Map to list words and definitions for the vocabulary words above (See Vocabulary section) along with basic designs of different examples of solar panels. **Helpful Question: Which team member(s) would be best to research this? What will you use to make your Mind Map?**
3. Research what renewable materials within Minecraft can be used to build a sustainable building with solar panels. **ADD INFORMATION TO THE MIND MAP. (NO BUILDING AT THIS STAGE).** Helpful Question: Which team member(s) would be best to research this? How will you record what materials are best for a sustainable building using solar panels?
4. Teams may also add interesting facts if time allows.

DESIGN

Using your researched information your team must construct a sustainable school that has the following features. Incorporate all of the features on the rubric to help your team become Minecraft Masters!

Features to include	Good	Excellent	Minecraft Masters
NPC guides (using job roles listed below)	NPC guides for 1/3 listed job roles Each NPC explains their job role 1 x URL button for more information	NPC guides for 2/3 listed job roles Each NPC explains their job role 1 x URL button for more information 1 x command button to teleport user to a feature of the sustainable school	NPC guides for 3/3 listed job roles Each NPC explains their job role 2 x URL button for more information 1 x command button to teleport user to a feature of the sustainable school
Design (A5 grid paper)	Includes: Key for materials used Sustainable school Location of NPCs	Includes: Key for materials used Sustainable school Playing Field Location of NPCs	Includes: Key for materials used Sustainable school Playing Field Carbon neutral transportation Location of NPCs
Build	Must include Sustainable school 1 x NPCs	Must include Sustainable school Playing Field 2 x NPCs	Must include Sustainable school Playing Field Carbon neutral transportation 3 x NPCs
Book & Quill	Documents the building of the sustainable school Must include each teammates contribution to the build Minimum of two pages Minimum of two photos	Documents the building of the sustainable school and playing field Must include each teammates contribution to the build Minimum of three pages Minimum of three photos	Documents the building of the sustainable school and playing field with carbon neutral transportation Must include each teammates contribution to the build Minimum of four pages Minimum of four photos

Job Roles: 1. Renewable Energy Expert 2. Renewable Construction Expert 3. Renewable Energy Designer

DEVELOP

Check in plenary questions.

Check in plenary questions. The first list (1) is to be asked before the **Design** section is introduced and the teams have discussed how they will complete the assignment.

1 - Before build challenge

- Do you understand what you need to do?
- Who will be in charge of time management?
- Who will use the device first to attempt the challenge?

2 - During challenge

- Has your designer completed the design? Are you following it to build your school?
- Is it a good time to switch roles and let your partner use the device?

3 - Near completion time

- Has anyone had to make changes to the design? Is it reflected in the build?
- **Have a team who has completed the challenge assist others that are struggling**

DELIVER

EXTENSIONS:

Mild

Use of Redstone in build

Spicy

Use of pistons or floating structures

Hot

Use of coding or command blocks

DISCUSS

BE PREPARED TO ANSWER THE FOLLOWING QUESTIONS AS A TEAM AT THE END OF YOUR BUILD:

1. Did your team complete the challenge?
2. Did your team complete the mind map?
3. How did you perform together as a team (1 -10)?
4. What new information can we add to our mind maps? (Allow time for this)