Charge My Phone Teacher Notes

Primary (5-6)

ACTIVITY DESCRIPTION

The Charge My Phone activity introduces the concept of energy transformation and illustrates the different forms energy takes before appearing as electrical energy in our everyday lives. Students will look at the conversion of energy required to charge a mobile phone from the source to the electrical power supply and are asked to order the different steps of the process in a chronological sequence.

INSTRUCTIONS

1. Sequence

Each card in this activity represents a stage in the process of converting coal into electrical energy to charge our phones. Order each card into the correct chronological sequence for this process.

2. Renewable Alternatives

What if we were to substitute the use of a renewable energy in place of coal? Find the 'Renewable Energy' cards and insert them into the first sequence, removing any cards/processes that are no longer required.

3. Discussion

- 1. Label the different forms of energy and their transformations throughout the process. Are there any by-products (e.g. steam, heat, light, carbon emissions)?
- 2. How is electric energy transported along this process?
- 3. Compare the energy source of coal, to that of the sun or wind. What do you notice is different about these processes?

SUGGESTIONS FOR ASSESSMENT

Formative

- 1. Participation in the Charge My Phone activity
- 2. Participation in the Discussion questions above

BACKGROUND NOTES

The majority of Australia's electricity is produced from fossil fuels, including 73% from coal. The burning of coal releases carbon emissions, a greenhouse gat that contributes to climate change.

Carbon dioxide is essential for life and naturally present in the atmosphere as part of the Earth's carbon cycle (the natural circulation of carbon among the atmosphere, oceans, soil, plants, and animals). However, human activities are altering the carbon cycle—both by adding more CO2 to the atmosphere and by influencing the ability of natural sinks, like forests, to remove CO2. While CO2 emissions come from a variety of natural sources, human-related emissions are responsible for the increase that has occurred in the atmosphere since the industrial revolution, primarily through the combustion of fossil fuels (coal, natural gas, and oil) for energy, manufacturing and transportation. This has contributed significantly to global warming.



Coal Energy Sequence





ACTIVITY SOLUTIONS

Wind Energy Sequence



Solar PV Energy Sequence



ACCESS THIS ACTIVITY

Visit the **CERES School of Nature and Climate website** to download the activity - <u>https://sustainability.ceres.org.au/education-resources/curriculum-activities/</u>



Curriculum and RSS Links

KEY CONCEPTS

Forms of Energy, Energy Transformations, Fossil Fuels, Resources, Energy Efficiency

KEY LEARNING INTENTIONS

- 1. Students will be able to identify different forms of energy; including moving vs stored energy
- 2. Students will understand that energy cannot be created or destroyed but transformed from one form to another
- 3. Students will recognise the need for a complete circuit to allow the flow of electricity

VICTORIAN CURRICULUM

Science

5 - 6

Energy from a variety of sources can be used to generate electricity; electric circuits enable this energy to be transferred to another place and then to be transformed into another form of energy (VCSSU081)

English

5 - 6

Identify and explain how analytical images like figures, tables, diagrams, maps and graphs contribute to our understanding of verbal information in factual and persuasive texts (VCELA340)

SUGGESTED RESOURCESMART SCHOOLS MODULE LINKS



Undertaking the activity as described above links to the *ResourceSmart Schools Energy Module - actions B1.2, B1.3*

Below is a list of extension activities that link to additional actions of the Energy module:

- 1. Identify different forms of energy around us in the room or outside and discuss kinetic vs potential energy *(ResourceSmart Schools Energy Module action B1.3)*
- 2. Discuss electrical circuits and conductors/insulators and how energy is able to be transferred to another place and transformed *(ResourceSmart Schools Energy Module action B1.3)*
- 3. Invite a local indigenous group to share their traditional perspectives on the different forms of energy used to meet their needs for comfort and everyday tasks *(ResourceSmart Schools Energy Module actions B1.5, B1.6)*
- Students to write a report about key findings of the activity and share in your school's newsletter and website, including tips about being more energy smart at home (*ResourceSmart Schools Energy Module - actions C1.1, C1.3, C3.5*)
- 5. Extend activity to research other sources for generating electrical energy in Australia and around the world (e.g. water, nuclear, solar). Engage with students from other schools interstate or overseas to share findings *(ResourceSmart Schools Energy Module action C3.7)*

Speak to your CERES ResourceSmart Schools Facilitator about further links to the Energy module.

