



THE POWER OF WATER

Lesson Ideas

These curriculum-linked lesson ideas and activity sheets offer a range of learning experiences for primary and middle-years students exploring the topic of water power.

Broad learning outcomes

Using this curriculum material will assist students in achieving the following broad learning outcomes:

- Students will discover how various forms of hydropower work.
- Students will learn how the power of water has been used for various purposes throughout the ages.
- Students will recognise that water is a valuable resource.

English

- Students to create an illustrated non-fiction book for younger students, explaining how one form of hydropower works.
- Students to complete the '**Hydropower PMI**' activity sheet then develop a persuasive speech to convince others of the benefits of hydropower.
- Students to read the 'The power of water' facts for students and answer the questions on the '**Amazing power of water**' activity sheet.
- Students to investigate the old saying 'grist to the mill'. What does it mean and what is its connection to water wheel-driven grain mills?
- Students to complete the '**A wheel of words**' activity sheet.
- Students to complete the '**KWL chart**' or '**TWLH chart**' activity sheet.

Mathematics

- Students to test the power of water by using various quantities of water to try and move an object. The instructions and a data collection table are available on the '**Go with the flow**' activity sheet. Once data is collected, students create a graph to show their results.



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- Water wheels have 'paddles' that are equally spaced around a circle. Students to use items, including a protractor and a compass, to practice ways of dividing various-sized circles into equal sections. Students will need this skill if they choose to make a model of a water wheel (see instructions with activity sheets).
- Students to estimate and then use various measuring containers to explore what constitutes a litre. Students to record their results. Students could also convert findings into millilitres.
- Students to investigate how much water is needed to make a water wheel turn. Investigate different-sized wheels.

Science

- Students to investigate hydroelectric power. What is it? Where are some of Australia's hydroelectric power stations located? What is it about the location of these power stations that makes them suitable for generating hydroelectric power?
- Students to use toy cars and recycled plastic sauce bottles (the squeezable type with a nozzle) to have 'water races'. This involves students filling the sauce bottle with water and using only the power of the water to move the toy car across a distance.
- Students to investigate kinetic and potential energy. As a class, discuss how kinetic and potential energy apply to water wheels.
- Students to select one form of hydropower (e.g. dams, wave or water wheels) and compare it to a non-renewable form of energy (e.g. gas or coal). They can use the '**Power Venn diagram**' activity sheet.
- Hydropower is considered a renewable source of energy. Students to explain why this is the case.
- Students to select one type of hydropower and create an annotated diagram to show how it works.

Humanities and Social Sciences

- Students to research the Snowy Hydro Scheme and consider the role of migrants in the construction of this amazing structure.



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- Hydropower is the world's leading source of renewable energy (producing around 71%). Students to research what another country (other than Australia) is doing in terms of hydropower. Good options include China, Brazil or France, and there is easy to access information on the World Energy Council website (www.worldenergy.org).
- The invention of simple machines had an enormous impact on the way humans lived, survived and developed. As a class, discuss how our lives would be different if we had no machines or tools. In groups, students to prepare a speech for the class in response to this discussion.
- Students to discuss the importance of water as a valuable resource. What would communities do without water? Students to discuss what they can do to ensure that this precious resource is used wisely.
- Students to consider how the flow of water connects and affects communities and the environment. They could consider irrigation, water levels, ecosystems, spiritual connections, livestock watering, recreational use of water etc.

The Arts

- Water is not only a valuable resource, it has also been the inspiration for many great pieces of art. Students to select a water-inspired piece of art to analyse or recreate. Here are some suggestions:
 - *The Wave* – Renoir
 - *The Wave* – Courbet
 - *Water Lilies* – Monet
 - *The Sound of Water* – Papi
- Students to research pieces of music that have been inspired by water. Classify them into genres. How does each piece make them feel? Students then create an artwork inspired by a piece of music.

Technologies

- Students to test a range of materials to determine which would be suitable for use in a hydropower facility. What qualities/properties do the materials have that make them suitable?



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- Paddle steamers have water wheels. Students to identify some current examples of operating paddle steamers and investigate how they work. How does the functioning of the paddle steamer water wheel compare to that of an 'undershot' water wheel operating in a running stream?
- Students to complete the '**Workings of a water wheel**' activity sheet. They will be required to briefly explain how various types of historical water wheels worked.
- Students to follow the instructions on the '**Make a water wheel**' sheet to make a simple model of a water wheel.

Health and Physical Education

- Students to brainstorm how we use water every day to keep ourselves healthy.