

# Transport Lesson 2 | Lesson Outline

## Learning intention:

To understand that electrolysis is a process used to make hydrogen, and have a general understanding of how electrolysis works.



<b>Resources</b> <b>Introductory Video</b> – Hydrogen Fuel (5mins 4secs) <b>Instruction Slides</b> – Hydrogen Hurry <b>Worksheet 2</b> – Hydrogen Hurry <b>Worksheet 2 – Answers</b> <b>Home Activity Outline</b> – Transport Passport <b>Home Activity Worksheet</b> – Transport Passport <b>Home Activity Answers</b> – Transport Passport	<b>Per class</b> Gym hall/large space A floor marker Small bean bags Empty bucket for bean bags Vests
<b>Hook into the lesson</b>	<p>Play <b>Introductory Video – Hydrogen Fuel</b>.</p> <p>The video explains that hydrogen is made through a process called electrolysis. Electrolysis is described in a simplified way.</p> <p>The video asks the following question, providing an opportunity to pause and discuss:</p> <ul style="list-style-type: none"> <li>• <b>What do you already know about hydrogen? Where can it be found? (1min 25secs)</b></li> </ul>
<b>Activity</b>	<p>Pupils will carry out a relay race where they will mimic the journey of hydrogen and oxygen atoms taking part in electrolysis, and then being used to generate electricity in a fuel cell.</p> <p>See <b>Instruction Slides – Hydrogen Hurry</b> for set-up.</p> <p>Introduce the idea that pupils are going to act as water molecules going through electrolysis.</p> <p>Facilitate the relay race using <b>Instruction Slides – Hydrogen Hurry</b>.</p> <p>During the activity, remind pupils of the following steps of electrolysis and fuel cells:</p> <ol style="list-style-type: none"> <li><b>1. Water is made up of 1 oxygen atom with 2 hydrogens on either side.</b></li> <li><b>2. Electrolysis splits water into hydrogen and oxygen.</b></li> <li><b>3. Hydrogen is collected and used in a fuel cell, where it combines with oxygen, and gives a flow of electricity.</b></li> </ol> <p>Give pupils <b>Worksheet 2 – Hydrogen Hurry</b>. Pupils will be asked to complete sentences that explain how hydrogen fuel is made using electrolysis.</p>
<b>Plenary</b>	<p>Lead a class discussion on the uses of hydrogen fuel and vehicles using the following questions.</p> <p><b>Q: Can you name as many benefits as possible for using hydrogen and electric vehicles?</b></p> <p>A: They don't use fossil fuels, so won't contribute to climate change. They don't release fumes when they drive, so won't contribute to air pollution. They are usually cheaper to run than petrol or diesel vehicles. If you have electric car charging at home, you can charge up overnight and don't need to wait while the vehicle charges.</p> <p><b>Q: Hydrogen is a fuel that can be used in vehicles to generate electricity. Can you think of other ways that hydrogen fuel could be used?</b></p> <p>A: Hydrogen fuel could be used in fuel cells to provide electricity for homes and businesses. This is particularly true of places that aren't hooked up to a mains electricity supply. Hydrogen could also be burned to provide heat in a heating system.</p>
<b>Home Activity</b>	<p>Give pupils <b>Home Activity Worksheet – Transport Passport</b>. Pupils will identify 5 forms of transport and outline the sources of energy the forms of transport use.</p>