

# STEM hydraulics

## KS2 children aged 7-11 years

Learning Objectives	Resources
<ul style="list-style-type: none"> <li>Understand the principle and applications of Hydraulics</li> <li>Improve observation and testing skills</li> <li>Understand how forces play a vital role in so much modern life</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">Build a canal online game</a></li> <li><a href="#">Anderton Boat Lift fact file</a></li> <li><a href="#">Hydraulics film</a></li> <li><a href="#">Understanding hydraulics</a></li> <li><a href="#">LEGO Anderton Boat Lift</a></li> </ul>
Success Criteria	
<ul style="list-style-type: none"> <li>Children will understand how hydraulics transfer forces through liquids in tubes.</li> <li>Most children will also understand that hydraulics can make forces bigger or smaller.</li> <li>Some children will also be able to explain that hydraulics work because fluids are incompressible, they cannot be squashed.</li> </ul>	
Teaching/Parent Input	
<p>STEM is all around us in our daily lives, simple forces that we all understand such as push and pull can be utilised for our own means. Using often simple machines or ideas we can manipulate forces to make tasks easier. Hydraulics are a reliable means to magnify and transfer forces from one place to another and historically found their way into many machines, some still to this day such as mechanical excavators and car brake systems. These activities encourage children to think about how what they are looking at works and give a grounding to an inquisitive mind to understand how many things we take for granted work.</p>	
Activities	
<p><b>Play:</b> the Build a canal game on the explorers website to gain an understanding of the challenges facing the canal builders and to understand the context of the solutions they came up with like the Anderton Boat Lift.</p> <p><b>Read:</b> all about the Anderton Boat Lift, a giant example of hydraulics and Victorian engineering in action using the same principles we try to understand in our activities. Amaze your family and friends with our fact file.</p> <p><b>Watch:</b> a short film at the Anderton Boat Lift. Our Understanding Hydraulics film gives some context to the experiments we do.</p> <p><b>Do:</b> look at our understanding hydraulics power point with simple experiments you can try yourself and keep an eye out when visiting the canal for examples of machines that use forces to make life easier.</p> <p><b>Create:</b> build your own Boat Lift with our Lego build along film.</p>	
Suggestions	
<p>Use this activity bundle as a starting point for further investigation and understanding into forces and motion, the history of the canals and your local waterways. What will you discover near where you live?</p>	
Plenary	Key Words
<p>Hydraulics are useful because fluids are incompressible. They cannot be squashed. Forces can make things easier and harder. Gravity makes it difficult to lift heavy things. We use machines to increase forces and makes jobs easier.</p>	<p>Hydraulics, forces, transfer, liquids, incompressible, magnify</p>
Useful websites/external resources	Get Outside Ideas
<p>The <a href="#">STEM Learning website</a> has lots of hydraulics resources to continue your learning.</p>	<p>Go and explore your local canal network, what things can you see and how do they work?</p>