

Year 6 Summer

DT Knowledge Organiser

Unit of work:

Ocean Exploration – Using hydraulics and pneumatics

Links to other year groups: Y8 Systems and Control

Key Vocabulary & Skills:

Annotate – to label something clearly

Construct – to build

Cross section – a view of the inside of an item when it is cut through the middle

Develop – to work out in detail

Evaluate – to assess your work

Hydraulic – to do with water

Pneumatic – to do with air

Historical facts/important people:

The hand bellows were the first pneumatic tools used by early metal workers. By the 17th century, it was **Otto von Guericke**, a German physicist and engineer, who improved and experimented with air compressors.

Water was first used to power water mills and to provide irrigation for farming. A French scientist, **Blaise Pascal** (1623-1662,) experimented with fluid mechanics and developed Pascal's law which explains how forces are transmitted through water.

Real World Examples

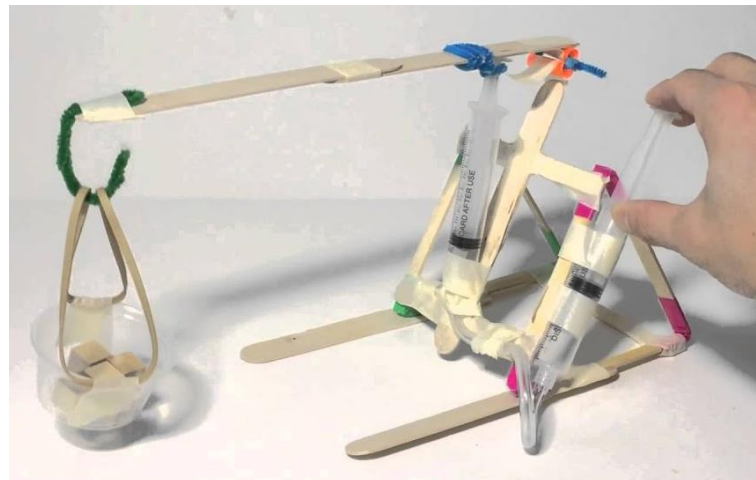
Hydraulics:



Pneumatics:



Constructional Diagram:



Key concepts:

What is hydraulic power?

Hydraulic power is power created by the push of a liquid. When you push on the liquid in a tube, the liquid will push against whatever it comes up against, even if it is bigger than the original tube. Therefore, it is possible to use a small amount of force to create a larger force somewhere else. This is how a water pistol and Tower Bridge in London work.



What is pneumatic power?

Tools and appliances driven by compressed air are known as pneumatic devices. The word pneumatic comes from the Greek pneuma, meaning "air" or "wind." In some cases, air suction instead of compression is used to operate the tool or appliance, as in the familiar vacuum cleaner.

Sequence of Lessons	
	Brief summary of lesson content
Lesson 1	Find out about pneumatic systems and their uses
Lesson 2	Find out about hydraulic systems and their uses
Lesson 3	Experiment with hydraulics and pneumatics using syringes of different sizes
Lesson 4	Research toys and machines which use hydraulics and pneumatics
Lesson 5	Follow instructions to construct a simple lifting machine
Lesson 6	Design and create own simple machine using hydraulics or pneumatics. Evaluate.

