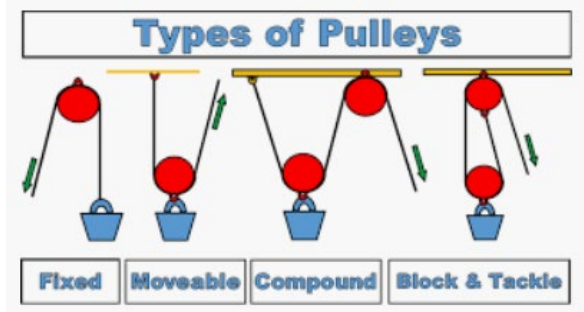


Spring Term	Lostwithiel Primary School	<u>Year Three</u>
Design and make a model cable car.	DT Knowledge Organiser	Beech Tree Class

Prior Learning: In Year Two, the children will have had experience of working with a wider range of materials and components, including construction materials. They will have gained experience of basic cutting, joining and finishing techniques with paper and card. They will have explored and used mechanisms such as levers, sliders and wheels in their products.

Key DT knowledge and skills:

- Pulleys are simple mechanisms that can be used to move heavy loads. The pulley changes the direction of the pull or force applied and transfers it to a cable or belt. The load attached to the pulley wheel belt will be lifted or lowered.
- Pulleys were first used 3000 years ago in Ancient Rome, Greece and Egypt, mainly to move water. Archimedes invented the first compound pulleys in 287 BC to move Greek warships.
- More complex pulley systems are used on modern cable cars to move people and goods up and down mountains.
- The cable car in Llandudno, Wales uses a pulley system to take tourists to the summit of Great Orme and back.
- The children will design a model cable car to transport a Lego family up and down a mountain. They will use either a fixed or moveable pulley system which will smoothly pull their model up and down a slope. The cable cars will be made from a cardboard net and bonded with PVA glue. The pulleys will be pre-purchased plastic wheels with ready made grooves for the cable (string).
- The design brief will be fulfilled if the Lego family can be transported safely and smoothly using the children's model cable car.



Key DT Vocabulary -		General Terms and Cross Curricular Vocabulary	
pulley wheel	A wheel, with a grooved rim for carrying a line, that turns in a frame or block and serves to change the direction of or to transmit force.	invent	Invent means to create or design something that has not existed before. In design and technology, the invention will fulfil a problem.
cable car	A transport system, typically one travelling up and down a mountain, in which cabins are suspended on a continuous moving cable driven by a motor at one end of the route.	force	In science, a force is the push or pull on an object with mass that causes it to change velocity (speed) and direction.
face	The 2D surface of a geometric shape, which can be folded to make a 3D form.	load	Load is a term frequently used in engineering to mean the force exerted on a surface or body.
net	The flat or opened-out shape of a 3D form such as a cube or prism.	model	A model is a small-scale replica of the potential finished product. Making a model allows designers to visualise and test how a product looks and performs in 3D.
scoring	Cutting a line or mark into sheet material to make it easier to fold.	evaluate	Designers evaluate their finished products or prototypes in order to test whether they work well and if the design can be corrected or improved.

DT Outcome

The children will design and make a cable car for a Lego family. The cable car will move up and down a slope using a simple pulley system.

Cross Curricular Links

Geography: Mountains topic

Science: Investigating forces

Forest schools: The children will use the forest school area to investigate different pulley systems. They will move natural materials, such as stones and logs, using fixed and moveable pulleys. They will sketch the pulleys, take photographs and discuss their investigations as part of the design process. The children will then use the area to find a slope and plan their cable car design. The cable car will be tested and evaluated with the Lego figures in the forest school area.

Linked documents: Class Overview, DT Whole School Progression document and Class Medium Term Planning.