

Year 5 – Term 6

Has the time come to trust machines more than humans?

DESIGN TECHNOLOGY



They will have an understanding of how to strengthen and stiffen structures.

Progression in Skill:

Research car design, generating innovative ideas through class discussion to develop an agreed design specification. Communicate ideas for car design through annotated and exploded drawings and drawings from different views. Mechanical and electrical systems have an input, process and output. Know how mechanical systems such as cams, pulleys or gears create movement. Know how to reinforce and strengthen a 3D framework. Formulate step-by-step plans as a guide to assembling your car. Select and use the appropriate tools safely (hacksaw, clamp, glue gun, metal ruler) Accurately measure, mark out and cut wood and dowel so that the components make the correct stable shape. Accurately apply a range of finishing technique, adding embellishments to the frame, making the product more attractive to the user. Consider the views of others, to improve their car design. Critically evaluate the quality of the design, manufacture and fitness for purpose against the original design specification. Evaluate their final products against their original design specification.

Long-term Memory Knowledge:

Use research to generate ideas and design specification. Use a range of drawings to communicate ideas. Know that mechanical and electrical systems have an input, process and output. Explain how pulleys and gears work. Suggest ways to strengthen 3D frameworks. Understand the need to work in a series of logical steps. Choose the most appropriate tools and materials for the task, knowing how to use each safely. Suggest ways to make the finished product appealing to the user, according to their wants and needs. Evaluate products against design specification.

National Curriculum Links:

Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. Select from and use a wider range of tools and equipment to perform practical tasks accurately. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events and individuals in design and technology have helped shape the world. Understand and use mechanical systems in their products (for example: gears, pulleys, cams, levers and linkages).

Essential Prior Learning:

Children should have had experience of axles, axle holders and wheels that are fixed or free moving. They will have knowledge of different cutting and joining techniques with a range of materials including card, plastic and wood.

Key Vocabulary

gear	a wheel with teeth around its circumference
drive belt	the belt which connects and transfers movement between two pulleys
pulley	a grooved wheel over which a drive belt can run
gearing up or down	changing the rotational speed of a product by the use of pulleys or gears; when a small pulley or gear is used to drive a larger one the rotational speed is reduced and the product has been geared down.
driver	the gear or pulley that provides the input movement to the system
follower	the gear or pulley that provides the output movement to the system
mesh	the point where two gears join together and transfer movement
motor spindle	the rod on the end of the motor onto which a gear or pulley is attached

Progression in Resources:

examples of everyday products/toys with pulleys or gears
electrical circuit components
construction kit pulleys and gears of different sizes
hacksaws, glass paper, G-clamps, bench hooks, hand drill, wire strippers
PVA glue, sticky pads, masking tape, dowel, double-sided tape, card triangles, square section wood, card

Relevance

Now	Children will understand how different mechanisms help humans in their everyday life.
Future	Children will be able to design, use, repair and evaluate simple mechanisms.
Aspiration	Children will use their mechanical knowledge to go on to become engineers and designers.