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| Year 6 |
| KS2 National Curriculum Objectives |
| When designing and making, pupils should be taught to: **Design** * 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

**Make** * select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], 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** * investigate and analyse a range of existing products
* 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

**Technical knowledge** * apply their understanding of how to strengthen, stiffen and reinforce more complex structures
* understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
* understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

apply their understanding of computing to program, monitor and control their products. |
| Year 6 Key Skills |
| Autumn Term | Spring Term | Summer Term |
| **Structures** |  | **Electrical Systems** |
| **Design*** Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.
* Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.

**Make*** Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.
* Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.
* Use finishing and decorative techniques suitable for the product they are designing and making.

**Evaluate** * Investigate and evaluate a range of existing frame structures.
* Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.
* Research key events and individuals relevant to frame structures.

**Technical knowledge*** Understand how to strengthen, stiffen and reinforce 3-D frameworks.
* Know and use technical vocabulary relevant to the project.
 |  | **Design*** Develop a design specification for a functional product that responds automatically to changes in the environment.
* Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams.

**Make*** Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.
* Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.
* Create and modify a computer control program to enable their electrical product to respond to changes in the environment.

**Evaluate** * Continually evaluate and modify the working features of the product to match the initial design specification.
* Test the system to demonstrate its effectiveness for the intended user and purpose.

**Technical knowledge*** Understand and use electrical systems in their products.
* Understand the use of computer control systems in products.
* Apply their understanding of computing to program, monitor and control their products.
* Know and use technical vocabulary relevant to the project.
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| Year 6 Vocabulary |
| Modelling, Compression, Strut, Tension, Tie, Horizontal, Vertical, Triangulation, Frame structure |  | Program, Microcontroller, Light emitting diode (LED), System, Output devices, input devices, Process |