Design Technology in Year 4

Topics: Design and make a WW2 shelter; Create an electronic Christmas card; Design and make a sewn sea creature; Create an Egyptian trap using pulleys and levers

Design and make a WW2 shelter

National Curriculum Statements:

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

Progression of Knowledge and Understanding in Year 4:

- Structures and Materials:
  - measure carefully to avoid mistakes
  - attempt to make product strong
  - continue working on product even if original didn't work
  - make a strong, stiff structure
- Mechanisms:
  - select most appropriate tools/ techniques
  - explain alterations to product after checking it
  - grow in confidence about trying new / different ideas.

Progression of Skills in Year 4:

- Design:
  - use research for design ideas
  - show design meets a range of requirements and is fit for purpose
  - begin to create own design criteria
  - have at least one idea about how to create product and suggest improvements for design.

- produce a plan and explain it to others
- say how realistic the plan is
- include an annotated sketch
- make and explain design decisions considering availability of resources
- explain how product will work
- make a prototype
- begin to use computers to show design

- Make:
  - select suitable tools and equipment, explain choices in relation to required techniques and use accurately
  - select appropriate materials, fit for purpose; explain choices
  - work through plan in order.
  - realise if product is going to be good quality
  - measure, mark out, cut and shape materials/components with some accuracy
  - assemble, join and combine materials and components with some accuracy
  - apply a range of finishing techniques with some accuracy
- Evaluate:
  - refer to design criteria while designing and making
  - use criteria to evaluate product
  - begin to explain how I could improve original design
  - evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose
  - discuss by whom, when and where products were designed
  - research whether products can be recycled or reused
  - know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products

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Create an electronic Christmas card

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Progression of Knowledge and Understanding in Year 4:

- Structures and Materials:
  - use simple circuit in product
  - learn about how to program a computer to control product
  - use a number of components in the circuit

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Design and make a sewn sea creature

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Progression of Knowledge and Understanding in Year 4:

- Textiles:
  - think about user when choosing textiles
  - think about how to make product strong
  - begin to devise a template
  - explain how to join things in a different way
  - understand that a simple fabric shape can be used to make a 3D textiles project

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  - explain alterations to product after checking it
  - grow in confidence about trying new / different ideas.
  - use levers and linkages to create movement
  - use pneumatics to create movement

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