Design Technology in Year 6

Topics: Design and make an intruder alarm; Design, make and market a chocolate bar; Design an unsinkable vessel

Design and make an intruder alarm

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 6:

- Electrical Systems:
  - use different types of circuit in product
  - think of ways in which adding a circuit would improve product
  - program a computer to monitor changes in environment and control product

Progression of Skills in Year 6:

- Design:
  - use computer-aided designs
  - draw on market research to inform design
  - use research of user's individual needs, wants, requirements for design
  - identify features of design that will appeal to the intended user
  - create own design criteria and specification
  - come up with innovative design ideas
  - follow and refine a logical plan.
  - use annotated sketches, cross- sectional planning and exploded diagrams
  - make design decisions, considering, resources and cost
  - clearly explain how parts of design will work, and how they are fit for purpose
  - independently model and refine design ideas by making prototypes and using pattern pieces

- Make:
  - be resourceful with practical problems
  - use selected tools and equipment precisely
  - produce suitable lists of tools, equipment, materials needed, considering constraints
  - select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics
  - create, follow, and adapt detailed step-by-step plans
  - explain how product will appeal to audience; make changes to improve quality
  - accurately measure, mark out, cut and shape materials/components
  - accurately assemble, join and combine materials/components
  - accurately apply a range of finishing techniques
  - use techniques that involve a number of steps

- Evaluate:
  - evaluate quality of design while designing and making; is it fit for purpose?
  - keep checking design is best it can be.
  - evaluate ideas and finished product against specification, stating if it's fit for purpose
  - test and evaluate final product; explain what would improve it and the effect different resources may have had
  - do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose
  - evaluate how much products cost to make and how innovative they are
  - research and discuss how sustainable materials are
  - consider the impact of products beyond their intended purpose
  - discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground- breaking products

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Cooking and Nutrition:

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Progression of Knowledge and Understanding in Year 6:

- Cooking and Nutrition:
  - understand a recipe can be adapted by adding / substituting ingredients
  - explain seasonality of foods
  - learn about food processing methods
  - name some types of food that are grown, reared or caught in the UK or wider world
  - adapt recipes to change appearance, taste, texture or aroma.
  - describe some of the different substances in food and drink, and how they can affect health
  - prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source.
  - use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.

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Progression of Knowledge and Understanding in Year 6:

- Structures and Materials:
    - select materials carefully, considering intended use of the product, the aesthetics and functionality.
    - explain how product meets design criteria
    - reinforce and strengthen a 3D frame

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