

## Design Technology in Year 5

**Topics:** Design and build a bridge

### Design and build a bridge

#### **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 5:**

- Structures and Materials:
  - select materials carefully, considering intended use of product and appearance
  - explain how product meets design criteria
  - measure accurately enough to ensure precision
  - ensure product is strong and fit for purpose
  - begin to reinforce and strengthen a 3D frame
- Mechanisms:
  - refine product after testing
  - grow in confidence about trying new / different ideas
  - begin to use cams, pulleys or gears to create movement

##### **Progression of Skills in Year 5:**

- Design:
  - use internet and questionnaires for research and design ideas
  - take a user's view into account when designing
  - begin to consider needs/wants of individuals/groups when designing and ensure product is fit for

- purpose
- create own design criteria
- have a range of ideas
- produce a logical, realistic plan and explain it to others.
- use cross-sectional planning and annotated sketches
- make design decisions considering time and resources.
- clearly explain how parts of product will work.
- model and refine design ideas by making prototypes and using pattern pieces.
- use computer aided design.
- Make:
  - use selected tools/equipment with good level of precision
  - produce suitable lists of tools, equipment/materials needed
  - select appropriate materials, fit for purpose; explain choices, considering functionality
  - create and follow detailed step- by-step plan
  - explain how product will appeal to an audience
  - mainly accurately measure, mark out, cut and shape materials/components
  - mainly accurately assemble, join and combine materials/components
  - mainly accurately apply a range of finishing techniques
  - use techniques that involve a small number of steps
  - begin to be resourceful with practical problems
- Evaluate
  - evaluate quality of design while designing and making
  - evaluate ideas and finished product against specification, considering purpose and appearance.
  - test and evaluate final product
  - evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose
  - begin to evaluate how much products cost to make and how innovative they are
  - research how sustainable materials are
  - talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground- breaking products