Design and technology

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Key stage 2 Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

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.

What should I already know?

Vocab:

Design, research, engineer, evaluate

What will I know by the end of the unit?

Recognise and describe different types of bridge structure

Name some bridges from around the world

Name some famous architects and engineers responsible for innovative bridge design.

Discuss benefits and negatives of different shapes and joins within structures

How to problem solve within a team to achieve success

How engineering design can overcome barriers

National Curriculum:

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Technical knowledge  apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Learning Experiences:

Research bridges from around the world

Discover more about Isambard Kingdom Brunel

Research and explore different bridge structures

Investigate different ways of joining materials

Investigate the strength of different shapes

Work as a team to design a bridge to span a gap and hold a weight considering budget, time and resources.

Evaluate designs.

Vocabulary:

Research

Suspension

Joint

Structure

Arch

Cantilever

Beam

Evaluation