

Key Stage Three

Technical knowledge

•understand and use the properties of materials and the performance of structural elements to achieve functioning solutions.

Evaluate

•analyse the work of past and present professionals and others to develop and broaden their understanding
 •investigate new and emerging technologies
 •test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups

Knowledge categories: Technical Knowledge/ Design Process.

Zaha Hadid



Knowledge categories: Design Process, Technical Knowledge/ Practical Knowledge

Cycle B Arch structures School

I know what a keystone, voussoir, impost and pier is and can draw elliptical, parabolic and catenary arch shapes. (basic)

I can use my knowledge of arch structures to solve a problem. (advancing)

I can investigate different arch structures and evaluate their design, including materials and manufacturing methods. (deep)

I can investigate different box kite structures and evaluate their design, including materials and manufacturing methods. (deep)

I can compare and evaluate the design features of a box kite and a tetrahedral kite. (advancing)

Cycle B Shell Structures

Knowledge categories: Technical Knowledge/Practical Knowledge

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I can suggest the most effective method to ensure my design is strong/stable. (deep)

I can demonstrate how to complete the following aspects of finger fluency: Shaping- score and bend card to make a corner, score and bend to make a curve. (basic)

I can rethink my design decisions by applying my technical knowledge of shell structures (advancing)

I can propose what the strongest shape will be for a stable shell structure and explain my choices.

YEAR 5/6

Cycle A Frame structures Kites

I can demonstrate a variety of ways in which straws can be joined together using annotated diagrams. (basic)

I can compare and evaluate the design features of a box kite and a tetrahedral kite. (advancing)

Cycle A Frame Structures - Bridge

YEAR 3/4

Knowledge categories: Technical Knowledge/ Practical Knowledge/ Design Process

I can apply my knowledge to construct a range of frame structures using different joining techniques. (advancing)

I can draw annotated diagrams to explain the theory of triangulation. (basic)

I can apply my knowledge of frame structures to construct a model of a chair that fits the brief. (advancing) and suggest a way that my idea could be improved next time. (deep)

I can compare examples of structures and say if they are natural or man made. (advancing)

Knowledge categories: Design Process/ Technical Knowledge.

Solid Structures STEM

I can label materials that I will use in my design. (basic)
 I can compare materials for strength, stability and how waterproof they are. (advancing)

YEAR 2

Frame Structures – Chair for a toy

Knowledge categories: Technical Knowledge

I can name different examples of the four structure types and identify which are natural and which are man made. (advancing)

Intro to Structures

I can list the four type of structure (shell, frame, solid, combined) (basic)

YEAR 1

FS2

PD ELG: Fine Motor Skills
 Use a range of small tools, including scissors, paint brushes and cutlery;

Expressive Arts and Design: Creating with Materials
 Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; - Share their creations, explaining the process they have used;