



Structures

Frame Structures

Y5

In this unit, we will design, make and evaluate a transport bridge for traversal of water.

Knowing More Remembering More:

Remembering previous learning

What is a structure? A structure is a 3D shape made from different materials and parts. They are made to be strong, stable and sturdy.

What is a free-standing structure? A free-standing structure is a structure that stands up on its own without being attached to anything else.

What is stability? Stability is the extent to which a structure will fall over if a force is applied.

What is a buttress? A buttress is a structure added to a wall, tower or framework to make it more stable or stronger.

What is a shell structure? A shell structure has a thin outer layer and is hollow.

Skills

I will be able to:

Design:

- 5.1 Record ideas using annotated diagrams.
- 5.3 Sketch and model alternative ideas.
- 5.4 Decide which design idea to develop.

Make:

- 5.7 Use a wide range of materials using research to inform decisions.
- 5.8 Use a wide range of tools to measure, mark, cut and assemble accurately.
- 5.10 Refine my product - review and rework/improve.

Evaluate:

- 5.11 Research and evaluate existing products using technical vocabulary, (including book and web based research).
- 5.12 Investigate key events and individuals in D&T.
- 5.14 Identify how well the finished product meets the design criteria of the user.

Vocabulary

Technical vocabulary

Frame structure, stiffer, strengthen, reinforce, triangulation, stability, compression, strut, tie, diagonal, horizontal, vertical, butt joint

Process vocabulary

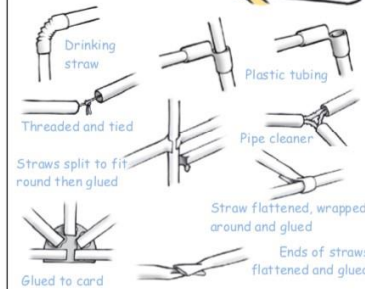
Shape, join, temporary, permanent, Design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, Names of tools, equipment and materials used

Techniques:

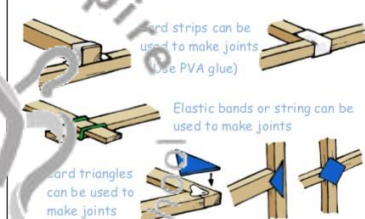
Techniques for building frame structures

Roll paper to make tubes for construction

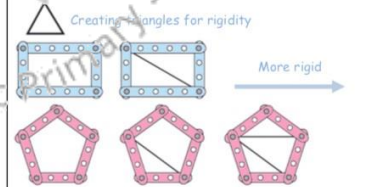
Joining straws



Joining thin sectioned pieces of wood

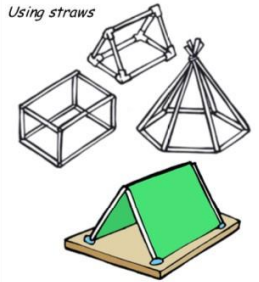


Understanding triangulation

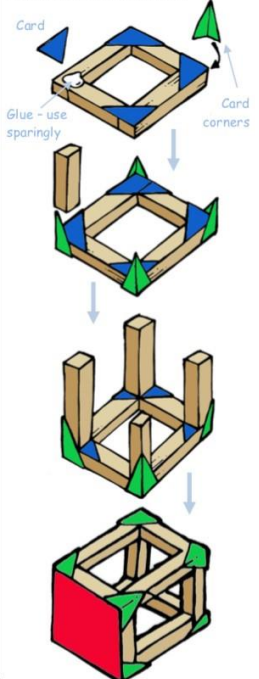


Making small-scale frame structures

Using straws



Using square section wood



Inspiring Individuals



Isambard
Kingdom Brunel



Sarah Guppy



Hellmut Homberg

Knowing More Remembering More:

Knowing more in Y5

What is a frame structure? A frame structure combines beams, columns, and slabs to resist a heavy load.

What is compression? Compression is the application of pressure to squeeze an object.

What is a strut? A strut is a part of a structure under compression.

What is tension? Tension is a force pulling on a material or structure.

What is a tie? A tie is a part of a structure under tension.

What is triangulation? Triangulation is the use of triangular shapes to strengthen a structure.

What is rigidity? Rigidity means that an object will not bend; it is inflexible.

What is a butt joint? A butt joint is a way to arrange and join two pieces of wood by placing the end of one piece of wood

