Year group: Year 2
Term: Spring
Subject: Design Technology – Structures - Free standing Structures - Castle

Key vocabulary

Frame Structure Shell Structure Stability Buttress

Prior learning

EYFS

Experience of using construction kits to build walls, towers and frameworks. Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. Experience of different methods of joining card and paper

What comes next?

Year 4. Autumn term – 2D shape to 3D product (nets for gift boxes)

The children will practise making nets out of card, joining flat faces with masking tape to create 3-D shapes. They will experiment with assembling in nets in numerous ways, demonstrating skills and techniques of scoring, cutting out and assembling using pre-drawn nets to construct a simple box. .

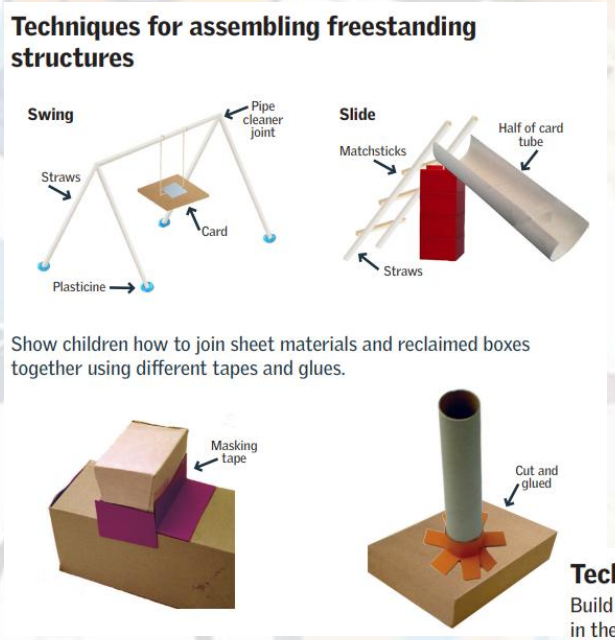
Notes and guidance

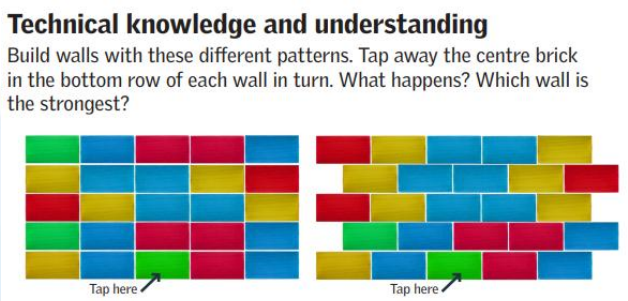
Demonstrate measuring, marking out, cutting, shaping, joining and finishing techniques with a range of tools and new and reclaimed materials that children are likely to use to make their structures.

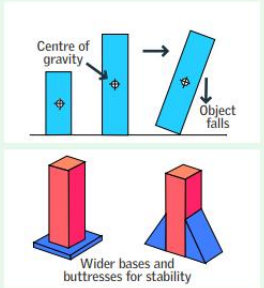
Discuss the suitability of materials for their products according to their characteristics.

Ask the children to build and explore a variety of freestanding structures using construction kits, such as wooden blocks, interconnecting plastic bricks and those that make frameworks e.g. How can you stop your structures from falling over? How they can be made stronger and stiffer in order to carry a load? Children could make models of the structures they have seen in school and the local area.

Ask children to fold paper or card in different ways to make freestanding structures, using masking tape where necessary to make joins. Encourage them to think about how folding materials can make them stronger, stiffer, stand up and be more stable cube







As a freestanding structure becomes taller its centre of gravity rises. Stability in a structure can generally be increased by making the base wider, making the base heavier or adding buttresses.

Ask the children to build and explore a variety of freestanding structures through focused tasks. Use a range of construction kits.

Substantive Knowledge

I Know how to make freestanding structures stronger, stiffer and more stable.

I Know and can use technical vocabulary such as frame and shell structures, stability and buttress.

Disciplinary Knowledge

I know that designers generate ideas based on simple design criteria and their own experiences, explaining what they could make.

I know that designers evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.

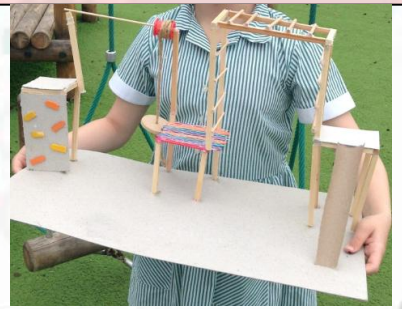
Procedural Knowledge

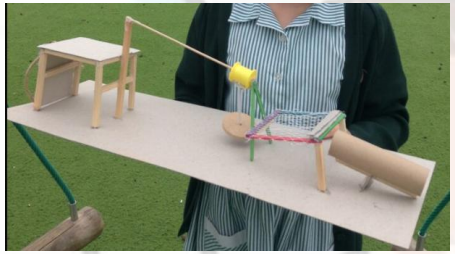
I know how to plan by suggesting what to do next.

I can select and use tools, skills and techniques, explaining my choices.

I can select new and reclaimed materials and construction kits to build my structures.

I can use simple finishing techniques suitable for the structure I am creating.





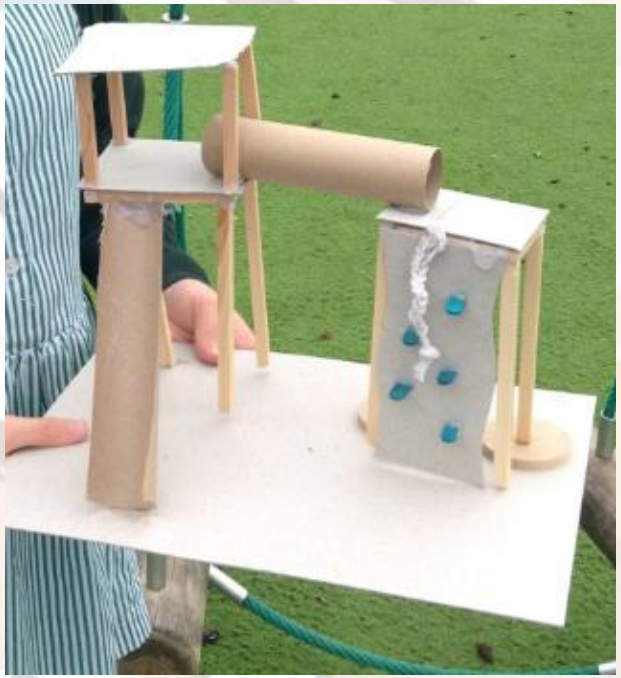
Links to other curriculum areas

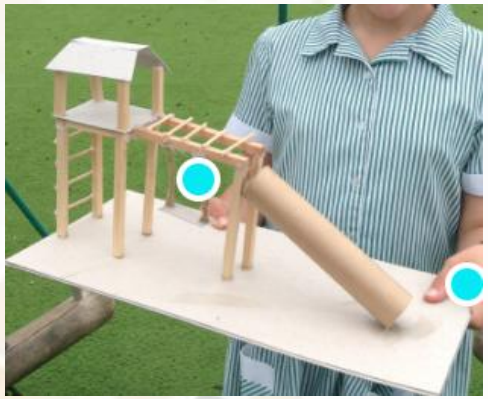
Maths – Shape Measures

Science - Materials

End Points

- To be able to use creativity and imagination to create high quality products.
- To master the use of a range of design technology tools and techniques.
- To be able to design, make and evaluate their products referring to whether it is fit for purpose and meets the design criteria.





Key Vocabulary definitions

- Frame Structure – A frame structure is made from sticks, straws, or rods joined together to make a shape, like the frame of a tent or climbing frame.
- Shell Structure – A shell structure has a solid outside that holds its shape, like a box, an egg, or a car body.
- Stability – Stability means how strong and steady something is so it doesn't fall over easily.
- Buttress – A buttress is a support or brace that helps to keep a structure strong and standing upright, like an extra leg or wall on the side of a building.

Resources

- Example freestanding structures (e.g. cube made from card, small model bridge, tower)
- For pupil exploration and model building:
- Construction kits, such as:
  - Wooden blocks
  - Interlocking plastic bricks (e.g. LEGO or duplo)
  - Straws and connectors (or pipe cleaners)
- New and reclaimed materials, for example:
  - Cardboard boxes, tubes, and packaging
  - Cereal boxes, bottle tops, egg cartons
  - Paper, thick card, paper straws
- Tools and joining materials:
  - Scissors
  - Rulers (for measuring and marking out)
  - Pencils and erasers
  - Masking tape, glue sticks, or string for joining
  - Hole punch or split pins (optional, for moving parts or pivots)
  - For testing and evaluating:
- Small weights or objects (to test strength/stability)