



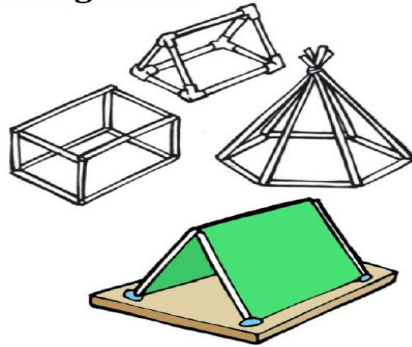
Project objective

Designing and making a small-scale bird hide for children to use in the school wildlife area

Design and Technology Knowledge Organiser
Year 5– Structures -Frame structures- Bird Hides

Making small-scale frame structures

Using straws



Technical Knowledge and understanding.

- Understand how to strengthen, stiffen and reinforce 3-D frameworks.
- Know and use technical vocabulary relevant to the project.

Focused skills

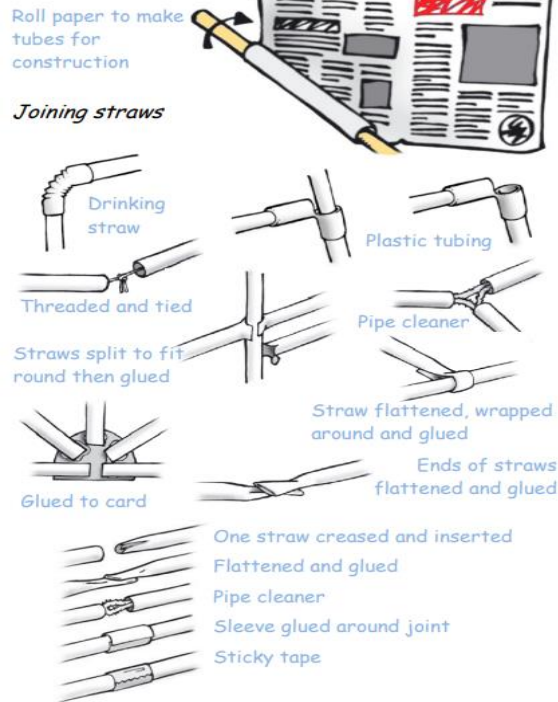
- Use a construction kit consisting of plastic strips and paper fasteners to build 2-D frameworks. Compare the strength of square frameworks with triangular frameworks.
- Reinforce square frameworks using diagonals to help develop an understanding of using triangulation to add strength to a structure.
- Demonstrate how paper tubes can be made from rolling sheets of newspaper diagonally around pieces of e.g. dowel. Ask children to use these tubes and masking tape or paper straws with pipe cleaners to build 3-D frameworks such as cubes, cuboids and pyramids. *How could each of the frameworks be reinforced and strengthened?*
- Demonstrate skills and techniques for accurately joining framework materials together e.g. paper straws, square sectioned wood. Ask children to practise these, mounting their joints onto card for future reference.

Vocabulary

frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent

design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional

Techniques for building frame structures



Key Learning

Prior Learning

- Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.
- Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.

Designing

- Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.
- Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.
- Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.

Making

- Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.
- Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.
- Use finishing and decorative techniques suitable for the product they are designing and making.

Evaluating

- Investigate and evaluate a range of existing frame structures.
- Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.
- Research key events and individuals relevant to frame structures.