Years 1/2

Structures
Freestanding structures

Instant CPD

DESIGN & TECHNOLOGY ASSOCIATION

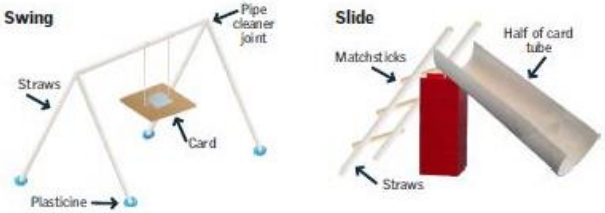
Tips for teachers

- Create a PowerPoint or range of pictures showing a variety of freestanding structures relevant to the product the children are designing and making.
- Exploring structures in the local area provides a good opportunity to develop children's observational drawing.
- Create and display a word bank of relevant technical vocabulary in the classroom.
- Ensure that work with construction kits and materials builds on children's prior experience in the Early Years Foundation Stage (EYFS).
- Ensure that different types of construction kits are available for children to explore through focused tasks.
- It is perfectly acceptable for children's final products to include both construction kits and consumable materials.
- Demonstrate measuring, marking out, cutting, joining and strengthening techniques and provide help sheets showing instructions for the children to practise independently.
- Prior to producing their designs, have a range of materials available for children to access and create models.

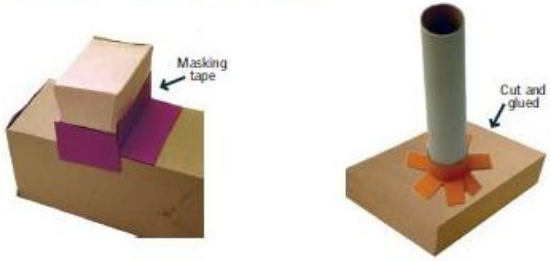
Useful resources at www.designtechnology.org.uk

- Door hinges helpsheet
- Let's Get Building and Using Construction Kits Effectively
- Hinges and Catches
- Bird Hide Design and Make Challenge (Yrs 5-6)
- Working with paper straws (Yrs 3-4)

Techniques for assembling freestanding structures

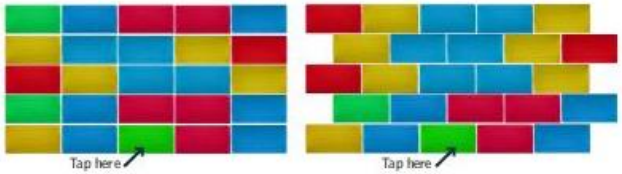


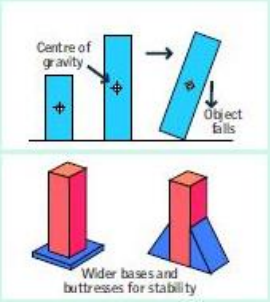
Show children how to join sheet materials and reclaimed boxes together using different tapes and glues.



Technical knowledge and understanding

Build walls with these different patterns. Tap away the centre brick in the bottom row of each wall in turn. What happens? Which wall is the strongest?





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.

Designing, making and evaluating a strong chair for Baby Bear

An iterative process is the relationship between a pupil's ideas and how they are communicated and clarified through activity. This is an example of how the iterative design and make process might be experienced by an individual pupil during this project:

THOUGHT	ACTION
What sort of chair shall I make? Who is it for and what is it for?	Choose an appropriate soft toy Generating ideas through talking and drawing based on own experiences.
How can I make sure it is strong, stiff and stable?	Developing ideas using construction kits to create mock-ups.
Which joining techniques will work best for the chair?	Exploring and evaluating joining techniques.
What media, materials and kits will I use?	Exploring and evaluating construction kits, new and reclaimed materials.
What shall I do first? What tools and techniques will I use? What materials shall I use?	Selecting from a range of tools, techniques and materials Explaining choices.
More thoughts... judging, planning, generating new ideas.	More actions... making, testing, modifying.
Will the chair meet the needs of the user and achieve its purpose?	Evaluating the chair with a soft toy and against design criteria.

Glossary

- **Freestanding structure** – a structure that stands on its own foundation or base without attachment to anything else.
- **Frame structure** – a structure made from thin components e.g. tent frame.
- **Shell structure** – a hollow structure with a thin outer covering.
- **Stability** – in relation to a freestanding structure, the extent to which it is likely to fall over if a force is applied.
- **Buttress** – a structure added to a wall, tower or framework to make it more stable and/or reinforce it.
- **Brick bonding** – arranging bricks in a wall to improve the performance of the structure or improve its appearance.
- **Mock-up** – 3-D representation of a product.