Curriculum Intent:

To use creativity and imagination to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values and to be able to evaluate past and present design technology, its uses and effectiveness.

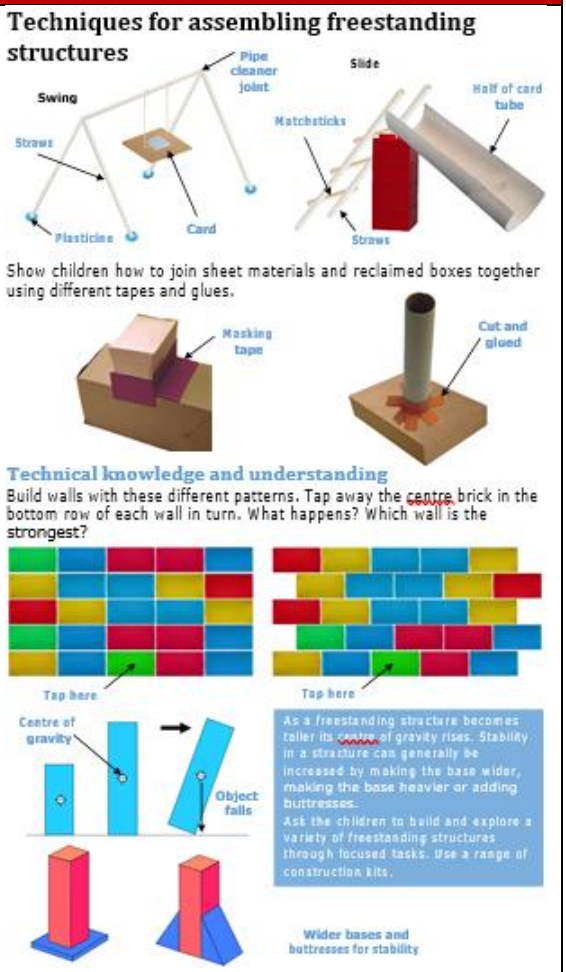
Subject	Term	Unit
DT	Spring	Structures: Freestanding structures

Prior knowledge Building on knowledge and skills	National Curriculum Focus
• 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.	• Design purposeful, functional, appealing products for themselves and other users based on design criteria • Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups • Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing) • Select from and use a wide range of materials and components • Explore and evaluate a range of existing products • Evaluate their ideas and products against design criteria • Build structures, exploring how they can be made stronger, stiffer and more stable

What?	Designing, making and evaluating a freestanding structure.
Why?	To begin to understand the importance of designing and making freestanding structures.

Key vocabulary			
freestanding structure	a structure that stands on its own foundation or base without attachment to anything else.	**shell structure**	a hollow structure with a thin outer covering
frame structure	a structure made from thin components e.g. tent frame.	**stability**	in relation to a freestanding structure, the extent towhich it is likely to fall over if a force is applied.

buttress	a structure added to a wall, tower or framework tomake 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.		

Key learning		
Objective	**Learning**	
Can I explore and evaluate a range of existing products?	• Explore a range of existing freestanding structuresin the school and local environment e.g. everydayproducts and buildings. • Go on a walk and/or look at photographs of the local area to explore structures such as playground equipment, street furniture, walls, towers and bridges • Ask the children to draw or photograph the structures they have been exploring and label with the correct technical vocabulary in relation to the structure, materials used and shapes e.g. wall, tower, framework.	
Can I explore techniques used to make freestanding structures?	• Demonstrate measuring, marking out, cutting, shaping, joining and finishing techniques with a range oftools 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 tapewhere necessary to make joins. Encourage them to think about how folding materials can make them stronger, stiffer, stand	

	up and be more stable e.g. *Can they support an object on top of their structures without it falling over or breaking?*	
Can I design purposeful, functional, appealing products for myself and other users based on a design criteria?	• Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings. • Discuss with the children what structure they will be designing, making and evaluating e.g. *Who will your product be for? What will be its purpose? What materials will you use? How will you make it strongand stable?* • Generate some simple design criteria with the children e.g. the structure should stand up on its own, itshould be strong enough to carry Teddy. • Encourage the children to develop their ideas through talking, drawing and making mock-ups of theirideas with construction kits and other materials.	
Can I select from and use a range of tools, equipment, materials and components to make a product?	• Select and use tools, skills and techniques,explaining their choices. • Select new and reclaimed materials andconstruction kits to build their structures. • Use simple finishing techniques suitable for thestructure they are creating. • As a whole class, plan the order in which the structures will be made. Children could make their final products from construction kits, new and reclaimed materials or any combination of these, according to their characteristics.	
Can I evaluate my ideas and products against a design criteria?	• Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. • Ask children to evaluate their developing ideas and final products against original design criteria.	

Websites

- Door hinges help sheet
- Let's Get Building and Using Construction Kits Effectively
- Chairs for Three Bears

- Hinges and Catches

Recommended Reads