

DT Progression of 'Structures'

Stage	<u>KS1</u> How freestanding structures can be made stronger, stiffer and more stable	<u>LKS2</u> How to make strong, stiff shell structures.	<u>UKS2</u> How to reinforce and strengthen a 3D framework.
1.	<i>Skills:</i> - explore how products work and how or where they might be used	<i>Skills:</i> - what methods of construction have been used - about inventors, designers, engineers, chefs and manufacturers who have developed products.	<i>Skills:</i> - why materials have been chosen - what methods of construction have been used - how innovative products are
	<i>Children will:</i> - carefully observe different types of freestanding structures. How do they stand? - identify features of freestanding structures - identify and compare materials used.	<i>Children will:</i> - carefully observe different types of shell structures; how have they been stiffened? how are they strong and stable? - identify components of shell structures and their purposes - develop an understanding of products similar to theirs. - investigate key people who have developed specific product and changes over time.	<i>Children will:</i> - understand how structures are made and that different structures are built for different purposes. - identify which parts support and strengthen structures and record using labelled drawings. - research how products have changed over time and understand why.
2.	<i>Skills:</i> - model ideas by exploring materials, components and construction kits and by making templates and mock-ups	<i>Skills:</i> - explain their choice of tools and equipment in relation to the skills and techniques they will be using	<i>Skills:</i> - explain their choice of tools and equipment in relation to the skills and techniques they will be using
	<i>Children will:</i> - explore basic joining techniques for 3D modelling e.g. glue or tape - explore how to make structures more stable - explore making simple hinges e.g. scoring & bending card, joining two pieces together etc - share findings with other children	<i>Children will:</i> - Construct stable structures using a variety of material. - describe ways of making strong and stable structures - know how to strengthen paper and card in different ways - Understand that 3D shapes can be constructed out of nets	<i>Children will:</i> - explore how to reinforce and strength 3D frameworks e.g. a simple square framework by adding diagonals and/or triangles. - explore creating 3D structures from different materials and test strength, adapting as needed - appropriately use a variety of temporary and permanent joining techniques using a

		and assembling	
3.	<i>Skills:</i> - work confidently within a range of contexts, such as imaginary, story based, home, school, gardens, playgrounds, local community, industry and the wider environment state what products they are making - select from a range of materials and components according to their characteristics	<i>Skills:</i> - develop their own design criteria and use these to inform their ideas - make design decisions that take account of the availability of resources	<i>Skills:</i> - generate realistic ideas, focusing on the needs of the user - work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
	<i>Children will:</i> - create a design based on prior knowledge from previous steps - talk or draw design, identifying materials and techniques to be used.	<i>Children will:</i> - as a class/group, develop design criteria. - create a detailed design based on prior knowledge from previous steps and design criteria taking into account the purpose and user of the product. - Collate ideas through drawings with labels.	<i>Children will:</i> - independently develop design criteria taking into consideration purpose and user. - develop their ideas in detailed models and drawings, taking account of the available resources, the sequence of construction and the techniques to be used.
4.	<i>Skills:</i> - use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components. - assemble, join and combine materials and components	<i>Skills:</i> - use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components - assemble, join and combine materials and components with some accuracy	<i>Skills:</i> - use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components - accurately measure, mark out, cut and shape materials and components - accurately assemble, join and combine materials and components - demonstrate resourcefulness when tackling practical problems
	<i>Children will:</i> - safely join and combine 2D and 3D materials to make their design, using appropriate techniques - add finish and detail to their design	<i>Children will:</i> - discuss the order in which to create product. - follow design and take into consideration learning from previous steps when making. - safely make a strong, stable product using skills learnt	<i>Children will:</i> - Safely and accurately assemble, join and finish their product based of design plans. - Evaluate their work as it progresses, adapting and making suggestions for alternative methods of construction if

		account the product user.	
5.	<i>Skills:</i> - make simple judgements about their products and ideas against design criteria.	<i>Skills:</i> - refer to their design criteria as they design and make - how well products have been designed and made	<i>Skills:</i> - consider the views of others, including intended users, to improve their work
	<i>Children will:</i> - talk about their finished product and the main features - discuss strengths and areas for development	<i>Children will:</i> - discuss their product and the choices they made. - evaluate their product according to shared design criteria.	<i>Children will:</i> - use simple tests to evaluate the function and strength of their product. - evaluate theirs and others products according to design criteria in a positive, constructive manner
Key Vocab	<i>structure, strong, stable, hinge, combine, join, fix</i> + vocabulary specific to the purpose and features of their product	<i>2D, 3D, stable, stiffen, frame, sturdy, reinforce, score, assembly, component, purpose, criteria</i> + vocabulary specific to the purpose and features of their product	<i>reinforce, strengthen, framework, structure, material, criteria, assemble, purpose, finish, component, fair test,</i> + vocabulary specific to the purpose and features of their product