



## DESIGN AND TECHNOLOGY PROGRESSION: Disciplinary and Substantive knowledge

Designing					
	KS1	Year 3	Year 4	Year 5	Year 6
Generating ideas	Think of own ideas and plan what to do next.	Create a design that meets a range of requirements.	Generate more than one idea for how to create a product.  Gather information for how to design a successful product (i.e. by asking others' views, conducting research)	Generate a range of ideas after collating relevant information (i.e. user's views, research)	Use a range of information to inform a design (i.e. market research using surveys, interviews, questionnaires or web-based resources e.g. padlet?)
Designing a product	Describe designs using pictures, diagrams, models, mock-ups, words and ICT.	Describe a design using an accurately labelled diagram, and in words.  Consider the equipment and tools needed when planning.	Produce a detailed plan with labelled diagrams, a written explanation and step-by-step guide.  Suggest improvements to develop and refine a planned idea.	Produce a detailed plan with step-by-step instructions, cross-sectional diagrams (and possibly prototypes)  Suggest alternative plans, considering the positive aspects and drawbacks of each.	Produce a detailed plan with cross-sectional diagrams (some of these should be computer-generated designs)
Target Audience	Work confidently in a range of contexts (imaginary, home, school, wider community, imaginary-based)		Be able to identify an appropriate target audience	Be able to explain the needs of their target audience.	Work within constraints, refining and justifying plans as necessary.
Vocabulary	The Design and Technology vocabulary; design, make, evaluate, material and equipment are referred to in DT lessons	<b>Criteria</b> – a series of requirements or 'must haves' for a product  <b>Diagram</b> – a plan/ picture of a product design. These should be labelled with main features, materials	<b>Market Research</b> – Research that is conducted about products that already exist. This could be done through a visit, internet research or other methods such as questionnaires/surveys.	<b>Cross-sectional diagram</b> – a diagram or design of a product where you can see it from different angles i.e. Side view, Front view and view from above.	<b>Computer-generated design</b> – The used of computers or technology to aid in the creation of a design.



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		used and possible methods of joining if needed.	<b>Target Audience</b> – The audience or people a product is aimed at/meant for.  <b>Step-by Step Guide</b> – Written instructions to share how to construct/produce a product.	<b>Exploded diagram</b> – a diagram of a product where the pieces are separated so they can be clearly described/seen.	
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Making					
	KS1	Year 3	Year 4	Year 5	Year 6
Construction	<p>Know about movement of simple mechanisms such as levers, sliders, wheels and axles.</p> <p>Use sheet materials and construction tools with appropriate supervision.</p>	<p>Use sheet materials and construction tools with appropriate supervision.</p> <p>Use a range of tools and equipment accurately.</p> <p>Measure, mark out, assemble and join materials and components with some accuracy.</p> <p>Tools used:</p> <ul style="list-style-type: none"> <li>- Junior hacksaw</li> <li>- Sandpaper</li> </ul>	<p>Use sheet materials and construction tools with appropriate supervision.</p> <p>Use a range of tools and equipment accurately.</p> <p>Measure, mark out, assemble and join materials and components with some accuracy.</p> <p>Tools used:</p> <ul style="list-style-type: none"> <li>- Cutting mat</li> <li>- Craft knives?</li> <li>- Needles, pins, scissors</li> </ul>	<p>Tools used:</p> <ul style="list-style-type: none"> <li>- Needles, pins, scissors</li> <li>- Chalk to mark out?</li> </ul>	<p>Use sheet materials and construction tools appropriately.</p> <p>Use a range of tools and equipment accurately.</p> <p>Measure, mark out, assemble and join materials and components with some accuracy.</p> <p>Tools used:</p> <ul style="list-style-type: none"> <li>- Junior hacksaw</li> <li>- Sandpaper</li> <li>- Drills?</li> </ul>
Textiles	<p>Cut, then join textiles using a running stitch, over sewing or glue.</p> <p>Decorate using a range of items (buttons, sequins, beads, ribbons etc.)</p>		<p>Cut, then join textiles using a running stitch, over sewing, back stitch or fastenings.</p> <p>Understand seam allowances.</p> <p>Create simple patterns and appropriate decoration techniques (e.g. applique)</p> <p>Measure, mark out, assemble and join materials and components with some accuracy.</p> <p><u>Vocabulary</u> Running Stitch, Back stitch Seam, Pattern, Applique</p>	<p>Pin and tack fabrics. Use patterns and seam allowances.</p> <p>Join fabrics to make quality products.</p> <p>Use a range of tools and equipment accurately.</p> <p>Measure, mark out, assemble and join materials and components with some accuracy.</p> <p><u>Vocabulary:</u> Pin/Tack, Seam allowance</p>	



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Mechanisms		<p>Know about movement of simple mechanisms such and levers, sliders, wheels and axles.</p> <p><u>Vocabulary:</u></p> <ul style="list-style-type: none"> <li>- lever</li> <li>- slider</li> <li>- wheel</li> <li>- axle</li> </ul>	<p>Know about movement of simple mechanisms such and levers, sliders, wheels and axles.</p> <p>Know about movement of simple mechanisms such as levers or linkages.</p> <p><u>Vocabulary</u></p> <p>Lever Linkage</p>		<p>Understand how mechanical systems such as cams, pulleys or gears create movement.</p> <p><u>Vocabulary:</u></p> <p>Cam Pulley Gear</p>
Electronics	Not taught at KS1		<p>Understand how simple electrical circuits can be used to create a functional parts.</p> <p>How to program a computer to control their products.</p> <p><u>Vocabulary:</u></p> <p>Simple Circuit Program Control</p>		<p>Understand how more complex electrical circuits and components can be used to create functional products.</p> <p>Understand how to program a computer to monitor changes in the environment and control their product.</p> <p><u>Vocabulary:</u></p> <p>Component Complex Circuit Monitor Environment</p>
Cooking and nutrition	Know how to peel, cut, grate, mix and mould foods (with adult supervision)	Know how to peel, cut, grate, mix, mould, chop, slice, knead and begin to cook foods (using toasters and microwaves with supervision)		<p>Peel, cut, mix, grate, mould, chop, slice, knead and use hobs to heat food, developing independence as appropriate.</p> <p>Know that seasons may affect the food available</p>	



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		<p>Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the eat-well plate.</p> <p>Know that to be active and healthy, food and drink are needed to provide energy for the body.</p> <p><u>Vocabulary:</u></p> <ul style="list-style-type: none"><li>- Food groups (Fruit and Vegetables, Carbohydrates, Dairy, Protein, Fats)</li><li>- Balance, variety</li><li>- peel, cut, grate, mix, mould, chop, slice, knead</li></ul>		<p>Know how food is processed into ingredients that can be eaten or used in cooking.</p> <p>Know that different food and drink contain different substances – nutrients, water, fibre – that are needed for health.</p> <p><u>Vocabulary</u></p> <p>Seasonality Processed Fibre Nutrients</p>	
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Evaluating					
	KS1	Year 3	Year 4	Year 5	Year 6
Planning	Describe how their own and pre-existing products work, evaluating what went well and what could be done differently.	Evaluate own pre-existing products.	Evaluate the appearance and usability of pre-existing products	Evaluate the appearance and function of a pre-existing product against the original criteria, saying whether it is fit for purpose.	Evaluate the appearance and test the function of a pre-existing product against the original design criteria, saying whether it is fit for purpose.
Monitoring				Consider the aesthetic qualities and functionality of my work when making.	Consider the aesthetic qualities and functionality of my product as making it.  Refine details of my product as necessary.
Evaluating	Suggest what went well and what could be done differently when evaluating their own product.	Suggest what could be changed to improve a design, beginning to link this to the design brief.	Explain how the original design could be improved, considering the appearance and usability, linking this to the design brief.	Suggest improvements that could be made, considering materials and methods that have been used.	Suggest improvements that could be made, considering materials, methods, sustainability of the product and how much a product costs to make.
Vocabulary		<b>Improve</b> – suggest or make changes that could make the quality of a product better, help it be more useful to its audience or suit its purpose better.	<b>Usability</b> - How easy a product is to be used/displayed by the target audience. Is the applique clear to see? Do moving parts actually move/ move easily? Does the product hold itself up if needed? Is it securely fastened/ joined?	<b>Aesthetic</b> – How something looks, a theme, how the target audience is drawn in.  <b>Functionality</b> – How a product works, does it serve its purpose?  <b>Drawbacks</b> – Potential issues with a product,	<b>Refine</b> – make minor changes to improve a product/design.  <b>Justify</b> – provide a reason for something  <b>Fit for purpose</b> – Does the product actually do what it is meant to? Children should be able to explain how their product is or isn't fit for purpose.



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			<p><b>Appearance</b> – The looks of a product. Particular visual features that might interest the target audience.</p>	<p>problems that may be presented during design/making process.</p> <p><b>Purpose</b> – What a product is for, does it provide a service?</p>	<p><b>Sustainability</b> – Does their product meet the needs of the present without preventing people in the future from creating a product. i.e. How environmentally friendly are their materials? Have they considered how much of their materials are going to be thrown away? Could the product be repurposed when it is no longer useful?</p> <p><b>Costs</b> – Consider giving the children a budget that they can use to ‘buy’ materials.</p>
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