



## Design and Technology Curriculum Intent

At St John's the design and technology curriculum is designed to enable all children to learn the vocabulary, knowledge and skills needed to be informed, creative designers with a understanding of how culture and product design has been shaped by great designers. Pupils will subsequently be ready for the next phase of education. Our curriculum has been carefully designed to meet the needs of all children, enabling fluency and independence. The curriculum has been thoughtfully sequenced to encourage progression of skills and knowledge. Projects are selected to build on prior learning enabling pupils to develop a greater sense of the relevance of design and technology within the modern world.

### Compass Curriculum Drivers

	In all subjects...	In design and technology, this looks like...
Citizenship	We want children to flourish in their sense of self-worth and through this have respect for others. Our curriculum promotes an appreciation and respect for diversity through a celebration of heritage, culture and religion so that all are encouraged to be inclusive, open minded and be ready and willing to develop new friendships. Our learners are encouraged to speak out against injustice.	<ul style="list-style-type: none"> <li>• Pupils learn about how design decisions can help inclusivity within society.</li> <li>• Pupils design and create products for different community groups</li> </ul>
Oracy	We prioritise speaking and listening and recognise that developing speaking and listening skills needs to be at the heart of teaching and learning at St John's CE Primary School. We aim to develop children's speaking skills and also prioritise opportunities to learn through talk. We see oracy as part of the school's pedagogy, not a standalone lesson or subject and we expect it to be a valued feature in all aspects of school life.	<ul style="list-style-type: none"> <li>• Pupils are encouraged to present their research and finding to an audience.</li> <li>• Children articulate and discuss design decisions throughout the making and designing process.</li> </ul>
Mastery and Mindset	We want every child to develop a love of learning by ensuring that they have a deep, long-term, secure and adaptable understanding of the subjects they are taught. Through the language we use, activities we plan into our lessons, and by modelling it with our own behaviour we encourage pupils to adopt a growth mind set. We want children to take risks and know that through making mistakes we learn and improve. We want children to have courage and resilience to keep going, even when things are hard.	<ul style="list-style-type: none"> <li>• Pupils explore accidental discoveries and the power of perseverance.</li> </ul>
Past/present/place	We aim to promote a sense of belonging and purpose throughout teaching and learning at St John's CE Primary School. Through learning about the past, we identify ways to create a better future. We want our learners to appreciate that our world is precious and needs to be looked after. We seek to grow courageous advocacy in our learners so that children experience how they can also be game changers and activists to make changes for the better.	<ul style="list-style-type: none"> <li>• Children will learn about the history of design</li> <li>• Using the STEM platform pupils will explore the future of design and the impact of developments in technological thinking.</li> </ul>
Aspiration	We want all our children to aspire and to live their lives to the full. We understand that we need to broaden their horizons through rich experiences of the world. We provide a supportive environment in which to nurture their interests and self-belief and seek to offer high quality opportunities in order for each individual to become aware of their own potential for success.	<ul style="list-style-type: none"> <li>• Pupils will learn about innovative people through history who have shaped the world we live in today.</li> <li>• Through guest speakers and interaction with the STEM community pupils will learn about career opportunities and experiences available through design and technology.</li> </ul>
Self Esteem	We know that in order for our learners to achieve they need to develop the social and emotional skills needed to access learning and develop positive relationships underpinned by a sense of understanding, justice, empathy and respect for themselves and others. This sits alongside a total commitment to high quality teaching and learning that is experienced by every child no matter what their starting points might be, underpinned by high expectations and targeted intervention to ensure that success can be celebrated for every child and their family.	<ul style="list-style-type: none"> <li>• Pupils will have opportunities to evaluate and give feedback of final products.</li> <li>• They will test effectiveness of their designs and be given opportunities to make improvements and suggest enhancements to their products.</li> </ul>
Spirituality	We prioritise time and space to offer children at St John's CE Primary School opportunities to reflect, think upon and value creativity, beauty and amazement through our curriculum. We promote and offer opportunities to explore spirituality throughout all that we do. We value this as a treasured opportunity to ensure that our children develop good mental health, have opportunities to experience peace, acceptance and appreciation of wonder therefore growing in their understanding of themselves, others, the world and beyond.	<ul style="list-style-type: none"> <li>• Pupils will enjoy satisfaction of seeing something new being created.</li> <li>• We will look at how products can be designed and made to have a positive impact on the wider world.</li> </ul>

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Unit 1	<b>Junk Modelling</b>	<b>Textiles</b> Textiles and Joining- Stockings	<b>Mechanisms</b> Sliders and leavers- Christmas cards	<b>Textiles</b> 2D shape to 3D product- Christmas craft	<b>Structures</b> Shell structures using computer aided design	<b>Mechanical Systems</b> Cams	<b>Structures</b> Frame structures – Anderson shelters
Unit 2	<b>Construction Kits</b>	<b>Sliders and leavers</b> Moving storyboard (Jack and the beanstalk)	<b>Textiles</b> Templates and Joining- hand puppets	<b>Mechanical Systems</b> Leavers and linkages	<b>Electrical Systems</b> Simple circuits and switches- quiz boxes	<b>Textiles</b> Combining different fabric shapes	<b>Food</b> Celebrating seasonality- Victorian soup and bread
Unit 3	<b>Food</b> Preparing a healthy snack	<b>Wheels and axles</b> Fire engines	<b>Food</b> Preparing fruit and vegetables- fruit salad	<b>Electrical Systems</b> Simple programming and control	<b>Food</b> Healthy and varied diets- Viking feast	<b>Mechanical Systems</b> Pulleys and Gears	<b>Electrical Systems</b> Monitoring and control- lighthouses

**Substantive Concepts – these are the concepts that give a subject substance or content.**

Our curriculum is refined yearly, but it maintains a consistent knowledge base to ensure conceptual progression. We have identified a set of key substantive concepts that children will repeatedly revisit throughout their time at St John's. Our substantive concepts are: Structures, Mechanisms and Mechanical Systems, Electronic Systems, Program, monitor and control, Cooking and Nutrition and Textiles

	Technical Knowledge				Cooking and Nutation	Textiles
	Structures	Mechanisms and Mechanical Systems	Electronic Systems	Program, monitor and control		
EYFS	Junk Modelling	Construction Kits			Preparing a healthy snack	
KS1		Moving storyboard (Jack and the beanstalk)  Fire engines  Sliders and leavers- Christmas cards			Preparing fruit and vegetables- fruit salad	Textiles and Joining- Stockings  Templates and Joining- hand puppets
LKS2	Shell structures using computer aided design	Leavers and linkages	Simple programming and control  Simple circuits and switches- quiz boxes		Healthy and varied diets- Viking feast	2D shape to 3D product- Christmas craft
UKS2	Frame structures – Anderson shelters	Cams Pulleys and Gears	Monitoring and control- lighthouses	Monitoring and control- lighthouses	Celebrating seasonality- Victorian soup and bread	Combining different fabric shapes

## Second order concepts

<p><b>User</b> Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or a specific target group.</p>	<p><b>Purpose</b> Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use</p>	<p><b>Functionality</b> Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes. In D&amp;T, it is insufficient for children to design and make products which are purely aesthetic</p>	<p><b>Design Decisions</b> Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and use learning from other subjects. When making design decisions, pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.</p>
<p><b>Design Decision</b> Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and use learning from other subjects. When making design decisions, pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for</p>	<p><b>Innovation</b> When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.</p>	<p><b>Authenticity</b> Pupils should design and make products that are believable, real and meaningful to themselves and others.</p>	<p><b>Innovation</b> When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.</p>

## Progression of Substantive Concepts

Progression in Designing							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Understanding contexts, users and purposes</b>	<p>Say what to make.</p> <p>Say what the product is for.</p> <p>Say who a product is for (me, my mum, my dad, my friend etc.).</p> <p>Say what colours it will be.</p> <p>Point to what material will be used to make the product from a selection made available.</p>	<p>Say a sentence explaining what to make.</p> <p>Say how the product will be made.</p> <p>Explain who the product is for.</p> <p>Explain what the product is for.</p> <p>Explain how the product will work.</p> <p>Justify why certain materials have been chosen to make the product.</p> <p>Use the classroom success criteria to make a product.</p>	<p>Draw and label a design of the product</p> <p>Say who the intended user of the product is.</p> <p>Describe the purpose of the product.</p> <p>Explain how the product will be made e.g. by writing a set of simple instructions.</p> <p>Explain in detail how the product will work using technical vocabulary provided.</p> <p>Say why certain materials were chosen and why they are suitable for the intended user.</p> <p>Use simple design criteria to develop ideas.</p>	<p>Describe the purpose of the product.</p> <p>Identify the key design features of the products and explain how these will appeal to the intended users.</p> <p>Explain in detail how the product will work using technical language.</p> <p>Find out information to help design a product for a particular group of people.</p> <p>develop a design criterion.</p>	<p>Describe the purpose of a products with increasing confidence, demonstrating that there has been careful thought about the purpose.</p> <p>Indicate the design features of a products that will appeal to the intended users.</p> <p>Explain how particular parts of a products work using technical language e.g. the rotary input will produce a linear output.</p> <p>Gather information about the needs and wants of particular individuals and groups the product is being designed for.</p> <p>Develop specific design criteria and use these to inform ideas.</p>	<p>Begin to carry out research to help with a design including collecting data through surveys and study of existing products.</p> <p>Identify the needs, wants or preferences of the intended user of the product.</p> <p>Develop a drawing of a design to guide thinking which includes detail about measurements, materials used etc.</p>	<p>Carry out research, using surveys, interviews, questionnaires and web-based resources where appropriate.</p> <p>Identify the needs, wants, preferences and values of particular individuals and groups of intended product users.</p> <p>Develop a simple design specification to guide thinking.</p>

<b>Generating, developing, modelling and communicating ideas</b>	Talk about likes.	Talk about experiences of using different products.	Generate ideas by drawing on own experiences.	Begin to develop design ideas whilst thinking about the needs of the user.	Generate realistic ideas, focusing on the needs of the user.	Generate innovative ideas.	Generate innovative ideas, drawing on research.
	Talk about things that are used (or played with).	Talk about a range of different products.	Use knowledge of existing products to help come up with ideas.	Make decisions about the materials that from a range that is available.	Make design decisions that take account of the availability of resources.	Make decisions about designs taking some factors into account e.g. time.	Make design decisions, taking account of constraints such as time, resources and cost.
	Draw ideas.	Begin to communicate ideas by talking and drawing.	Develop and communicate ideas by talking and drawing.				
	Explore materials.	Explore materials and make templates and mock-ups.	Model ideas by exploring materials, components and construction kits and by making templates and mock-ups.				
		Share ideas with others.	Use information and communication technology, where appropriate, to develop and communicate ideas.				
<b>DESIGN</b>	<b>EYFS</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Vocabulary</b>	<b>Ideas, make, create, design, product, purpose, job, intended user.</b>			<b>Develop (ideas), generate (ideas), materials, and availability (of resources).</b>		<b>Constraints - e.g. time, resources, materials. Innovative, components.</b>	
<b>The Greats</b>	<p><b>Ole Kirk Christiansen</b> designed <b>Lego</b>.</p> <p><b>Jock Kinnear and Margaret Calvert</b> designed the <b>road signs</b> we see all around us.</p>			<p><b>Harry Beck</b> designed <b>The map of the London Underground</b>.</p> <p><b>John S. Pempberton</b> designed one of the most famous logos in the world: <b>Coca Cola</b>.</p> <p><b>Henri de Toulouse-Lautrec</b> was an artist and designer. He created some of the first <b>posters</b>.</p>		<p><b>Ruth Kedar</b> designed the <b>Google</b> logo.</p> <p><b>Alec Issigonis</b> designed one of the most famous and recognised cars, the <b>Mini</b>.</p> <p><b>Rob Janoff</b> is a graphic artist noted particularly for designing the logo for <b>Apple</b>.</p>	
	<i>Develop questions to ask when designing and developing ideas...</i>						

<b>Questions</b>	<p><b>KS1 Design - Talking and drawing:</b> How could we make the ....? What materials could we use? What will it look like? What size, colour, shape, taste, texture ....? How will it work? What would happen if ....? How can we make it stronger?</p> <p><b>UKS2 Design - Questions to prompt the development of a design specification:</b> What will be the purpose or purposes of the product? Who is the intended user? What design features should the product include in order to meet user needs and wants? What safety or environmental requirements will it have to meet? How much should it cost to make? Are there any constraints that need to be followed e.g. using recycled fabrics only? What types of materials and components will the product be made from? What shape, size, weight and colour will it need to be? What design criteria will it have to meet if it is to be successful?</p>
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## Progression in Making

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Planning</b>	Begin to select materials with purpose in mind.	<p>Explain what is being made and why.</p> <p>Consider the next steps in the making process.</p> <p>Select tools/ equipment to cut, shape, join, finish and explain choices.</p>	<p>Make suggestions about what to do next.</p> <p>Choose suitable materials and explain choices depending on characteristics.</p> <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p>	<p>Select appropriate materials, fit for purpose.</p> <p>Work through plan in order.</p> <p>Consider how good a product will be when considering the purpose.</p>	<p>Select appropriate materials,</p> <p>Fit for purpose; explain choices.</p> <p>Work through plan in order.</p>	<p>Produce suitable lists of tools, equipment/materials needed.</p> <p>Select appropriate materials, fit for purpose; explain choices, considering functionality.</p> <p>Create and follow detailed step by-step plan.</p>	<p>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p> <p>Create, follow, and adapt detailed step-by-step plans. Explain how product will appeal to audience; make changes to improve quality.</p> <p>Produce suitable lists of tools, equipment, materials needed, considering constraints.</p>
<b>Practical skills and techniques.</b>	<p>Construct with a purpose, using a variety of resources.</p> <p>Use simple tools and techniques.</p> <p>Build / construct with a wide range of objects.</p>	<p>Measure, mark out, cut and shape, with support.</p> <p>Choose suitable materials and explain choices.</p>	<p>Explain what I am making and why it fits the purpose.</p> <p>Join materials/ components together in different ways.</p> <p>Measure, mark out, cut and shape</p>	<p>Select suitable tools/equipment, explain choices; begin to use them accurately.</p> <p>Begin to measure, mark out, cut and shape materials/components with some accuracy.</p>	<p>Select suitable tools and equipment, explain choices in relation to required techniques and use accurately.</p> <p>Realise if product is going to be good quality.</p>	<p>Use selected tools/equipment with good level of precision.</p> <p>Explain how product will appeal to an audience.</p>	<p>Use selected tools and equipment precisely.</p> <p>Accurately measure, mark out, cut and shape materials/components.</p> <p>Accurately assemble, join and combine</p>

	<p>Select tools &amp; techniques to shape, assemble and join.</p> <p>Replicate structures with materials / components.</p> <p>Discuss how to make an activity safe and hygienic.</p> <p>Record experiences by drawing, writing, voice recording.</p> <p>Understand different media can be combined for a purpose.</p>	<p>Try to use finishing techniques to make product look good.</p> <p>Work in a safe and hygienic manner.</p>	<p>materials and simple components independently.</p> <p>Use finishing techniques to make product look good and explain my choices.</p> <p>Work safely and hygienically.</p>	<p>Begin to assemble, join and combine materials and components with some accuracy.</p> <p>Understand that some products are made of different components and that these each have a function.</p> <p>Begin to apply a range of finishing techniques with some accuracy.</p>	<p>Measure, mark out, cut and shape materials/ components with some accuracy.</p> <p>Assemble, join and combine materials and components with some accuracy.</p> <p>Apply a range of finishing techniques with some accuracy.</p>	<p>Mainly accurately measure, mark out, cut and shape materials/components.</p> <p>Mainly accurately assemble, join and combine materials/ components.</p> <p>Mainly accurately apply a range of finishing techniques.</p> <p>Use techniques that involve a small number of steps.</p> <p>Begin to be resourceful.</p>	<p>materials/ components.</p> <p>Accurately apply a range of finishing techniques.</p> <p>Use techniques that involve a number of steps.</p> <p>Be resourceful with practical problems.</p> <p>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.</p>
<b>MAKING</b>	<b>EYFS</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Vocabulary</b>	<b>Tools, materials, join, structure, shape, assemble, purpose.</b>				<b>Equipment, materials, tools, purpose, design, make, accuracy, cut, components.</b>	<b>Accuracy, function, properties, join, cut, material, aesthetic.</b>	
<b>The Greats</b>	<p>Phillippe Stark: Industrial designer responsible for a range of products that have been ‘redesigned’.</p> <p><a href="https://www.starck.com/">https://www.starck.com/</a></p> <p>Ettore Sottsass: An Italian architect that produced a range of glass, jewellery, lighting and home objects.</p> <p><a href="https://www.phillips.com/article/31027760/important-works-by-ettore-sottsass">https://www.phillips.com/article/31027760/important-works-by-ettore-sottsass</a></p>		<p>Charles and Ray Eames: A design duo who specialised in furniture design.</p> <p><a href="https://www.eamesoffice.com/">https://www.eamesoffice.com/</a></p> <p>Paulo Venini: Glass designer and maker.</p> <p><a href="https://www.venini.com/eu/en/the-venini-world/the-authors/paolo-venini/">https://www.venini.com/eu/en/the-venini-world/the-authors/paolo-venini/</a></p>		<p>Ross Lovegrove: Industrial designer and maker.</p> <p><a href="http://www.rosslovegrove.com/">http://www.rosslovegrove.com/</a></p> <p>Thomas Heatherwick: Designer of larger installations with a range of purposes.</p> <p><a href="http://www.heatherwick.com/">http://www.heatherwick.com/</a></p>		<p>Michael Young: Industrial designer.</p> <p><a href="http://www.michael-young.com/">http://www.michael-young.com/</a></p> <p>Marc Newson: Industrial designer.</p> <p><a href="https://marc-newson.com/">https://marc-newson.com/</a></p> <p>Richard Hutton</p> <p><a href="https://www.richardhutten.com/">https://www.richardhutten.com/</a></p>
<b>Questions</b>	<b>Develop questions to ask when looking at products and/or construction kits</b>						
	Why are you making this in this way?						

	<p>How will you join your materials? What material will you use? What tools will you need to cut your materials? Do you need to measure your materials?</p>
	<p><b>Assessment</b></p>
	<p>Can children express a knowledge of different materials and their qualities? Can children demonstrate a knowledge of safe practice? Eg. <i>I can cut this card safely by... When I am using wood I need to...</i> Can children show different methods of joining materials? Can children create simple mechanisms? Can children cut accurately? Can children describe the purpose of their making?</p>

## Progression in Evaluation

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Evaluate</b>	Adapt work if necessary.	Talk about my work, linking it to what I was asked to do.	Look at design criteria while designing and making.	Evaluate quality of design while designing and making.			
	Dismantle, examine, talk about existing objects/structures.	Talk about existing products considering: use, materials, how they work, audience, where they might be used.	Use design criteria to evaluate a finished product.	Evaluate ideas and finished product against specification, considering purpose and appearance.			
	Consider and manage some risks.	Talk about existing products, and say what is and isn't good.	Say what I would change to make the design better.	Evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose.			
	Practise some appropriate safety measures independently.	Talk about things that other people have made.	Begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose.	Begin to evaluate how much products cost to make and how innovative they are.			
	Talk about how things work.	Begin to talk about what could make the product better. Describe what went well, thinking about design criteria.	Begin to understand by whom, when and where products were designed.	Research how sustainable materials are.			
	Look at similarities and differences between existing objects / materials / tools.	Talk about existing products considering: use, materials, how they work, audience, where they might be used and express personal opinion.	Learn about some inventors/designers/engineers/chefs/manufacturers of ground-breaking products.	Talk about some key inventors/designers/engineers/chefs/manufacturers of ground-breaking products.			
	Show an interest in technological toys.	Evaluate how good existing products are.	Refer to design criteria while designing and making.	Evaluate quality of design while designing and making; is it fit for purpose?			
	Describe textures.	Talk about what I would do differently if I were to do it again and why.	Use criteria to evaluate product.	Keep checking design is best it can be.			
			Begin to explain how I could improve original design.	Test and evaluate final product; explain what would improve it and the effect different resources may have had.			
			Research whether products can be recycled or reused.	Consider the impact of products beyond their intended purpose.			

<b>Vocabulary</b>	Change, like, dislike, next time, better, worse, different, instead	Change, improve, prefer, useful, unsuccessful, future, progress, modify, alter, adapt, original, finished article, evaluate, graphics.	Assess, edit, improve, alter, outcome, develop, test, analyse.	Effective, fit for purpose, design criteria, alternatives, models, quality, function, functionality.
<b>Questions</b>	<p>What excited you about your design?</p> <p>What didn't you like?</p> <p>What would you do next time?</p>	<p>What would you change about your design?</p> <p>How could you make your design faster/stronger etc?</p> <p>What do you like about someone else's design?</p> <p>What would happen if you changed....?</p> <p>What could you do to make your design better?</p> <p>Find one thing that is better about someone else's design.</p> <p>How would you help someone who wanted to make their own...?</p> <p>What is the best/worst thing about your design?</p>	<p>What could you change to improve your design?</p> <p>What made creating your design difficult?</p> <p>What questions would you ask if...?</p> <p>Explain what you could change and how it would improve your design?</p> <p>How would you change your design for the 'real world'?</p> <p>How effective at.... is your...?</p>	<p>How could you make your design more suited to mass production?</p> <p>What developments would need to be made for your design to....?</p> <p>What tests would you need to do to...?</p> <p>What would you need to change to be able to sell your design?</p> <p>How could you adapt... to make...?</p> <p>What do you predict would happen if...? Judge whether.... would cause/change/affect....</p>

## Progression in Technical Knowledge

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Structures</b>	<p>Use various construction materials.</p> <p>Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces.</p> <p>Join construction pieces together to build and balance.</p>	<p>Fold paper and card to create simple structures, making joins with masking tape where necessary, to explore the concepts of strength, stiffness and stability.</p> <p>Use construction kits to help develop understanding and include walls, buttresses, towers and frameworks.</p> <p>Create free standing structures e.g. a bird house using simple joining techniques.</p>		<p>Apply understanding of how to strengthen, stiffen and reinforce structures.</p> <p>Learn about the factors that can increase the strength and stiffness of <b>shell structures</b>, such as the properties of the material from which it is made, its shape and whether it has been reinforced in any way.</p>		<p>Create more complex structures that include a <b>frame</b> and outer skin e.g. tent frame</p>	
<b>Vocabulary</b>	<b>Towers/structure, walls, framework, shell, stronger, join/fix/attach</b>			<p>Stiffen/reinforce, shell, outer/inner skin, stiff, strong, shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesive, joining, assemble, accuracy, material, reduce, reuse, recycle, corrugating, ribbing, laminating.</p>		<p>frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, prototype, innovation, functional.</p>	
<b>Mechanisms and Mechanical systems</b>	<p>Use construction kits that include leavers and hinges.</p>	<p>Know that simple mechanisms produce different types of movement. Simple mechanisms include sliders which move in a straight line, levers which move in a curve and wheels and axles which turn.</p>		<p>Know how mechanical systems such as levers and linkages or pneumatic systems create movement.</p> <p>Explain how simple pneumatic systems work.</p>		<p>Know how mechanical systems such as cams or pulleys or gears create movement. Be able to explain why the mechanical components are suitable for the product they are designing and making according to the type of movement they produce.</p> <p>Cams</p>	
<b>Vocabulary</b>		<p>Slider, lever, pivot, linkage, bridge/guide, slot, pull, push, up, down, straight, curve, forwards, backwards.</p>		<p>Linear – in a straight line; reciprocating – backwards and forwards in a straight line e.g. a slider; rotary – round and round e.g. a wheel, cam, pulley, gear wheel; oscillating – backwards and forwards in an arc e.g. a lever.</p>			

<b>Electronic Systems</b>				Focus on physically controlling 'output' devices, such as bulbs, buzzers, electric motors and light emitting diodes (LEDs).  Learn to use text or create a flowchart to control a single device by turning it on and off according to a set of instructions.  The idea of an 'endless loop' should also be introduced so that sequences of instructions can be repeated. N.B. In the primary classroom, light emitting diodes (LEDs) with internal resistors should be used.	How to program a computer to monitor changes in the environment and control their products.  Develop an understanding of 'monitoring' as well as control and the idea of 'input' as well as 'output'.  Learn that it is possible to connect input devices such as light dependant resistors (LDRs), reed switches, push-to-make switches, pressure pads and toggle switches to an interface box or programmable micro-controller.		
<b>Vocabulary</b>				Series circuit, fault, connection, toggle witch, push-to make switch, push-to-break switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip, control, programme, system, input device output device, series circuit, parallel circuit, function, innovative, design, specification, design brief, user, purpose.			
<b>Program, monitor and control</b>				Know how to program a computer to control products they have designed and made; Focus on physically controlling 'output' devices, such as bulbs, buzzers, electric motors and light emitting diodes (LEDs); Learn to use text or create a flowchart to control a single device by turning it on and off according to a set of instructions. The idea of an 'endless loop' should also be introduced so that sequences of instructions can be repeated. N.B. In the primary classroom, light emitting diodes (LEDs) with internal resistors should be used.			
<b>TECHNICAL KNOWLEDGE</b>	<b>EYFS</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Vocabulary</b>				Reed switch, toggle switch, push-to make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip, control, programme, system, input device output device, series circuit, parallel circuit, function, innovative, design, specification, design brief, user, purpose.			
<b>The Greats</b>	<b>Thomas Eddison</b> <b>Joanna Webber</b> - aeronautical engineer who helped design Concorde	<b>Zaha Hadid</b> – arcitect <b>Isambard Kingdom Brunel</b> - engineer		<b>James Dyson</b> <b>Mary 'Molly' Fergusson</b> – recognised as the first British woman to work full-time in civil engineering		<b>Beatrice Schilling</b> – aeronautical engineer and motor racer <b>Caroline Haslett</b> – first secretary of the women's engineering society	
<b>Questions</b>	<i>Develop questions to ask when looking at products and/or construction kits</i>						
	What are the structures called?						

	<p>What materials have been chosen and why? How have the parts been joined together? How has it been made stable? How have they been made strong enough or stiff enough for their purpose? What parts of the _____ do you think will move? How do you make the mechanism move? What is the mechanism called? What type of movement does the mechanism make?</p>
<b>Assessment</b>	<p>How will you make your structure stand up on its own? How will you make it stable? How will you make it strong enough for its purpose? How will you make it stiff enough for its purpose? What materials or construction kits will you use? Why? How will you join the parts together? What parts will move? How do you want them to move? <i>What type of mechanism do you need for the ...?</i> <i>Where will you put the slot for the slider? Where will you put the pivot for the lever?</i> Will the wheels on your vehicle be fixed or loose on the axle? Why? Where will you put the axle holders so the vehicle will run in a straight line?</p>

## Progression in Cooking and Nutrition

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Cooking and Nutrition</b>	<p>Recap prior learning from FS1, using information passed on from nursery provision and following the information outlined in the EYFS curriculum 2021</p> <p>Follow instructions given one at a time by an adult.</p> <p>Carry out instructions with support.</p> <p>Discuss appropriate use of senses when tasting certain foods.</p> <p>Begin to develop a food vocabulary using taste, smell, texture and feel.</p> <p>Explore familiar food products e.g. fruit and vegetables. Stir, spread, knead and shape a range of food and ingredients.</p>	<p>Recap prior learning, ensuring children can follow out instructions given one at a time by an adult and can carry out instructions with support. Also check that children know, understand and can use in context the vocabulary outlined for EYFS</p> <p>Know that all food comes from plants or animals.</p> <p>Begin to recognise that everyone should eat five portions of fruit and vegetables a day.</p> <p>Sort into the five food groups, using the 'Eatwell Plate'.</p> <p>Know how to prepare simple dishes safely and hygienically without using a heat source.</p> <p>Understand hygiene rules when cooking.</p> <p>Know how to use techniques such as cutting, peeling and grating.</p> <p>Know that food has to be farmed, grown elsewhere or caught (Y2).</p>	<p>Recap prior learning, ensuring children know that all food comes from plants or animals, that food has to be farmed, grown elsewhere or caught and can name and sort foods into five groups, recognising that everyone should eat at least five portions of fruit of vegetables every day. Also check that children know, understand and can use in context the vocabulary outlined from KS1</p> <p>Start to know (Y3) and develop understanding (Y4) that food is grown (such as tomatoes, wheat and potatoes) reared (such as pigs, chicken and cattle) and caught (such as fish) in the UK, Europe and the wider world.</p> <p>Begin to understand how to prepare and cook a variety of predominantly savoury dishes (Y3) and savoury and sweet (Y4) dishes safely and hygienically, including where appropriate the use of a heat source.</p> <p>Start to understand that (Y3) and know that (Y4) a healthy diet is made up from a variety and balance of different food and drink, depicted in the 'Eatwell Plate'.</p> <p>Begin to understand that (Y3) and know that (Y4) to be active and healthy, food</p>	<p>Recap prior learning, ensuring children know that food is grown (such as tomatoes, wheat and potatoes) reared (such as pigs, chicken and cattle) and caught (such as fish) in the UK, Europe and the wider world, understand and apply principles of a healthy and varied diet, demonstrate a range of baking and cooking techniques and understand that recipes can be adapted to change appearance, taste, texture and aroma. Also check that children know, understand and can use in context the vocabulary outlined for KS1.</p> <p>Know that food is grown (such as tomatoes, wheat and potatoes) reared (such as pigs, chicken and cattle) and caught (such as fish) in the UK, Europe and the wider world.</p> <p>Begin to understand (Y5) and know that (Y6) seasons may affect the food available.</p> <p>Understand how food is processed into ingredients that can be eaten or used in cooking.</p> <p>Understand and apply principles of a healthy and varied diet.</p> <p>Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including the use of a heat source.</p> <p>Demonstrate a range of baking and cooking techniques.</p> <p>Understand that recipes can be adapted to change appearance, taste, texture, and aroma.</p>			

	<p>Begin to work safely and hygienically.</p> <p>Start the think about the needs for a variety of foods in a diet.</p> <p>Measure and weigh food items, non-statutory measures, e.g. spoons, cups.</p>	<p>Recognise that everyone should eat at least five portions of fruit or vegetables every day and they can consume more than this.</p> <p>Understand safety procedures for cooking with equipment (Y2).</p> <p>Assemble or cook healthy ingredients (Y2).</p> <p>Demonstrate how to use techniques such as cutting, peeling and grating (Y2).</p>	<p>and drink are needed to provide energy for the body.</p> <p>Join and combine a range of ingredients.</p> <p>Analyse the taste, texture, smell and appearance of a range of food (Y4).</p> <p>Develop understanding of how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p>	<p>Begin to understand, (Y5) and know (Y6) that different food and drink contain different substances- nutrients, water and fibre-that are needed for health.</p> <p>Understand the importance of correct storage and handling of ingredients (Y6).</p> <p>Create and refine recipes, including healthy seasonal ingredients, methods, cooking times and temperatures (Y6).</p> <p>Develop understanding of (Y5) know how to (Y6) how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p> <p>Measure accurately and calculate rations of ingredients to scale up or down from a recipe (Y6).</p>
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COOKING	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p><b>Skills to be covered including vocabulary highlighted in yellow:</b></p>	<p>Pull-hull fruit, pick grapes from a vine.</p> <p>Crush- soft fruits with a potato masher or folk, e.g. raspberries as a topping for a yoghurt or for a smoothie.</p> <p>Peel- by hand, e.g. satsuma, banana.</p> <p>Shape- foods by hand and with a rolling pin.</p> <p>Mix/stir- to loosely combine ingredients.</p> <p>Spoon- ingredients between containers.</p>	<p>Peel- by hand, e.g. satsuma, banana.</p> <p>Mix/stir – mash ingredients together using a folk.</p> <p>Spoon – ingredients between containers.</p> <p>Cut out- ingredients with a cutter, e.g. dough for scones.</p> <p>Tear- fresh herbs.</p> <p>Cut- soft foods with butter knife, e.g. banana, canned peach slices.</p> <p>Cut- use a folk to secure foods.</p> <p>Juice – using a juicer to extract juice, e.g. orange.</p> <p>Peel- with a swivel peeler adult support.</p> <p>Spread- soft ingredients, e.g. hummus.</p>		<p>Measure- refer to ingredients in simple fractions, half, quarter.</p> <p>Peel- with a swivel peeler with supervision.</p> <p>Press- using a garlic press (Y4).</p> <p>Mix/stir any ingredients thoroughly.</p> <p>Mix/stir- whisk foods using a hand-whisk (Y4).</p> <p>Spoon- to be able to use two spoons to transfer ingredients into different size/shape containers with minimal spillage, e.g. liquid foods into baking cases.</p> <p>Spread- ingredients evenly over another food (Y4).</p>		<p>Spoon- to be able to gauge the quantities spooned to ensure an equal amount of ingredients in each container.</p> <p>Measure- using digital and analogue scales accurately and independently.</p> <p>Grate- using a nutmeg grinder.</p> <p>Cut- higher resistance foods from whole using the bridge hold, e.g. halve an apple or raw potato.</p>	

	<p>Measure- using a spoon, e.g. dried herbs, dried fruit.</p> <p>Cut out- ingredients with a cutter, e.g. dough for scones.</p> <p>Tear- fresh herbs.</p> <p>Cut- soft fruits with butter knife, e.g. banana, canned peach slices.</p>	<p>Shape- use a rolling pin.</p> <p>Shape- with accuracy for a desired effect, e.g. basic bread roll.</p> <p>Mix/stir- with increasing thoroughness to combine ingredients.</p> <p>Mix/stir - whisk foods using a fork (Y2).</p> <p>Mix/stir- rub in fat to flour.</p> <p>Mix/stir - knead dough.</p> <p>Grate - e.g. cheese and cucumber.</p> <p>Thread - thread soft foods onto cocktail sticks, e.g. fruit kebab.</p> <p>Spoon -ingredients into different containers with increasing accuracy and minimal spillage (Y2).</p> <p>Measure – using different size measuring spoons, e.g. liquids (Y2).</p> <p>Measure- refer to ingredients in simple fractions, e.g. half, quarter (Y2).</p> <p>Cut out – use a table knife to cut dough in equal portions, e.g. cheese straws (Y2).</p> <p>Snip- fresh herbs, spring onions (Y2).</p> <p>Sift- sift flour into a bowl (Y2).</p> <p>Cut- low resistance foods with a table knife into equal pieces/slices, e.g. canned pineapple slices, pepper, mushrooms (Y2)</p>	<p>Shape/mould- to create visually appealing products, e.g. mini cottage loaf or plait, wrap (Y4).</p> <p>Measure- using a measuring jug with support to obtain accuracy.</p> <p>Measure- using digital scales with support to obtain accuracy (Y4).</p> <p>Cut out- placing cutters to avoid wasting the materials.</p> <p>Thread- medium resistance foods onto kebab sticks, e.g. mushrooms, courgettes.</p> <p>Cut- medium resistance foods with a vegetable knife, e.g. cucumber.</p> <p>Cut- use a fork or the claw grip to secure food.</p> <p>Cut- medium resistance or partly prepared foods using a bridge hold e.g. cut half a tomato into quarters, half large grapes (Y4).</p> <p>Grate – firmer foods e.g. carrots, apples (Y4).</p> <p>Snip – with grater dexterity and control, e.g. to shred lettuce or cabbage leaves for salad(Y4).</p>	
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