



Design & Technology curriculum Skills and Knowledge Learning Ladder

Holtsmere End Junior School has developed a long term Design and Technology plan that aims to:

Help children to develop skills, knowledge and understanding of materials and processes. It will help them to develop problem-solving skills and the ability to work methodically, evaluating their work and making necessary modifications.

Design and Technology contributes to the aims of the school and to the curriculum as a whole by preparing the children to participate in a rapidly changing technological world. It will help them to gain an understanding of products and systems and to consider the needs of the users of these products.

Implementation

It can provide an exciting and realistic context for the application of skills used and learnt in other curriculum areas, including computing. It provides opportunities for individual and collaborative work and can make important contributions to personal and social development, linking with the 5R's (Resourceful, Relationships, Reflective, Risk and Resilient). For some children it provides an area of activity in which their particular strengths come to the fore.

Through the curriculum, we aim to develop children's Design and Technology capability through a range of Challenge and Choice experiences which:

- Develop the knowledge, skills and understanding necessary to design, make and evaluate good quality products for a specific purpose.
- Develop practical skills to work with a wide range of tools and resources - Develop and understanding of controls systems, energy and structures
- Become increasingly dependent in their ideas, approach and selection of equipment and resources

- Acquire knowledge and understanding of quality, and of health and safety.
- Become aware of the impact of technology and its contribution to life and society.

As a school we will develop the Skills, Knowledge and Understanding as prescribed for Key Stage, ensuring Breadth of Study.

Impact

Staff will keep sufficient records to be able to comment on progress and achievement in end of year reports. Children must keep either a folder of their written work and planning or more usefully an A4 plain exercise book may be used. This, along with observation notes, photographs, will provide the evidence base with which the teacher may make informed judgements about children. .

Design and Technology National Curriculum Purpose of Study

The School will offer pupils a series of carefully planned Units of Work. These units of work are drawn mainly from the QCA Design and Technology scheme of work. These Units will develop and ensure the progression of skills and experiences as detailed in the Design and Technology Overview.

Each Year Group will study two/three Units of Work over the course of the year. Years 3 and 4 will study the two/three units; to ensure that they cover the full curriculum. Years 5 and 6 will study the two/three; to ensure that they cover the full curriculum. The children will use a range of materials including stiff and flexible sheet materials, mouldable materials, textiles, food, electrical and mechanical components.

Each Unit contains three essential types of activity. The school's Design and Technology planning sheets reflects these:

- (A) Investigating, disassembling and evaluating simple products (IDEAs) - investigating and evaluating a range of familiar products, by considering how they function, how they relate to their intended purpose, how they have been used and the views of users.
- (B) Focused Practical Tasks (FPTs) - in which children develop and practise particular skills and knowledge. In these activities there will be specifically focused direct teaching. Practical work will be less open-ended and outcomes more directed.

- **(C) Design and Make Assignment** - these are projects which will form the bulk of each Unit. They involve informed choices and decision making and require children to make use of the skills, knowledge and understanding they have developed in an overall context. The criteria for the DMA will be set by the teacher - it will be realistic but challenging and will reflect the previous experiences and existing capability of the children.

The Units of Work need to be seen as a whole scheme of work. Whilst each year group may vary or re-define the DMA and therefore the content of the Unit, the Unit must still make the same contribution to the overall scheme in terms of experiences and opportunities offered to the children.

Any planned alteration to the established Units of Work must be discussed with and approved by the Design and Technology co-ordinator.

Aims - The national curriculum for Design & Technology aims to ensure that all pupils:

- Asking appropriate questions
- Encouraging children to talk about and try out ideas.
- Encouraging children to reflect upon their work at various stages.
- Displaying aspects of the design process as well as finished products.
- Providing children with the opportunity to find out about designs in everyday contexts.
- Teaching appropriate skills and techniques as well as knowledge.
- Teaching how to peer and self-assess.
- Developing in children an understanding of quality.
- Include trips and/or visitors to enhance the quality of teaching and learning

In planning for their Units of Work, and for the individual sessions within them, teachers will need to take into account the creation of a safe and manageable working environment. This will include consideration of groupings of children and the location of various practical activities. In particular, teachers will consider activity which requires close supervision, access to electrical sockets, and access to clear spaces.

Teachers will anticipate resource requirements, especially if extra adult supervision is needed, for each session and have these readily available and accessible.

In planning practical work teachers will take into account the need to remain in control of the class as a whole- they may need to limit the amount and diversity of practical activity going on at anyone time.

Class teachers will establish clearly defined, safe working practices from the beginning and continually reinforce them throughout each Unit of Work.

Classroom routines will involve:

- Children stopping work immediately upon request
- Maintaining clear and tidy workspaces
- Safe handling, carrying and storage of tools and equipment
- Quiet, unhurried work
- Attention to thorough, safe clearing up and on-going

Teachers will involve children by giving them opportunities to recognise and discuss potential hazards and the risks they pose, and to consider and use simple rules that will help them stay safe. The teacher will always be prepared to stop the group to discuss aspects of safety.

When using adult help in the classroom teachers must ensure that helpers are briefed on the correct ways to use equipment and other resources, especially tools. This helps to ensure continuity and consistency and more importantly helps to reduce risk of injury.

Close Supervision, defined as an adult close to and aware of what children are doing, is required for the following equipment and resources:


- Knives - always to be used with cutting mat, and safety rule if appropriate
- Glue guns - to be used with a board which clearly indicates the working area, into which only one pair of hands should encroach. (Most glue gun accidents involve more than one person).
- Spray Cans - only to be used outside and with very close supervision.

Further guidance can be found in the H.E.S. Safety Guidelines which are available in the staff room.

End of Session Routine:

Plenty of time should be allocated to clearing away at the end of a session and in this there should be a sense of shared responsibility. Time should also be found at the end of each session for reflection and discussion. Older pupils can very usefully be involved in short written reviews of progress.

Progression of skills and knowledge in Design- KS2

Year 3	Year 4	Year 5	Year 6
<p>Generate ideas for an item, considering its purpose and the needs of the user/s.</p> <p>Explore how the design meets a range of requirements.</p> <p>Identify a purpose and establish criteria for a successful product.</p> <p>Plan the order of their work before starting, noting equipment and tools.</p> <p>Explore, develop, and communicate design proposals by modelling ideas; explaining how it works.</p> <p>Make drawings with labels when designing.</p> <p>Design and make a prototype.</p> <p>Use computers to show design.</p> 	<p>Generate ideas through discussion and research, considering the purposes for which they are designing.</p> <p>Make labelled drawings from different views showing specific features and create own design criteria.</p> <p>Develop a clear idea of what must be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail.</p> <p>Explain how the plan will be carried out.</p> <p>Understand how realistic a plan is.</p> <p>Evaluate and explain how products work and identify criteria that can be used for their own designs.</p> <p>Design and make a prototype.</p> <p>Use computers to show design</p>	<p>Generate ideas through mind-mapping and identify a purpose for their product, considering the user's view and needs.</p> <p>Use internet and questionnaires. for research and design ideas</p> <p>Draw up a realistic specification for their design, ensuring that it is fit for purpose.</p> <p>Develop a clear idea of what must be done, planning how to use materials, equipment, time, processes, and suggesting alternative methods of making if the first attempts fail.</p> <p>Explain clearly how the plan/product will be carried out/made.</p> <p>Make labelled cross-sectional drawings, showing specific features and create own design criteria.</p> <p>Design and make a prototype, using pattern pieces.</p> <p>Use results of investigations, information sources, including ICT when developing design ideas.</p>	<p>Draw on market research to inform design.</p> <p>Use research of user's individual needs, wants, requirements for design and what will appeal to the user.</p> <p>Communicate their ideas through detailed annotated sketches, containing cross-sectional drawings, creating their own design criteria and specifications.</p> <p>Develop an innovative design specification, considering how to use materials, equipment, time, processes, and suggesting alternative methods of making if the first attempts fail.</p> <p>Follow and refine a logical plan.</p> <p>Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways.</p> <p>Plan the order of their work, choosing appropriate materials, tools and techniques.</p>



Independently model and refine design ideas by making prototypes and using pattern pieces
Use computer-aided designs.

End of KS2 Expectation

- select tools and equipment suitable for the task
- explain their choice of tools and equipment in relation to the skills and techniques they will be using
- select materials and components suitable for the task
- explain their choice of materials and components according to functional properties and aesthetic qualities

In early KS2 pupils should also:

- order the main stages of making

By the end of KS2 most children will be able to:

- produce appropriate lists of tools, equipment and materials that they need
- formulate step-by-step plans as a guide to making

Progression of skills and knowledge in Making - KS2

Year 3 -	Year 4-	Year 5 -	Year 6
<p>Select suitable tools/equipment and techniques for making their product. Explain choices; begin to use them accurately.</p> <p>Work safely and accurately with a range of simple tools.</p> <p>Select appropriate materials, fit for purpose.</p> <p>Use a range of equipment including ICT.</p> <p>Assemble, join and combine materials and components with some accuracy. Think about their ideas as they make progress and be willing change things if this helps them improve their work.</p> <p>Measure, mark out, cut, score and assemble components with some accuracy.</p> <p>Consider how good their product will be.</p> <p>Use finishing techniques strengthen and improve the appearance of their product.</p> <p>Demonstrate hygienic food preparation and storage.</p>	<p>Select appropriate tools, materials, and techniques for making their product, explaining their choices in relation to required techniques.</p> <p>Measure, mark out, cut and shape a range of materials/components, using appropriate tools, equipment and techniques with some accuracy.</p> <p>Use simple graphical communication techniques.</p> <p>Join and combine materials and components accurately in temporary and permanent ways</p> <p>Measure, tape or pin, cut and join fabric with some accuracy.</p> <p>Sew using running stitch.</p> <p>Sew embellishments onto the fabric.</p> <p>Apply a range of finishing techniques with some accuracy.</p> <p>Work through plan in order.</p> <p>Realise if a product is going to be good quality.</p>	<p>Select appropriate materials, tools, and techniques (fit for purpose) and list them- considering functionality.</p> <p>Measure and mark out accurately</p> <p>Use skills in using different tools and equipment safely, accurately with a good level of precision.</p> <p>Create and follow detailed step-by-step plan.</p> <p>Use techniques that involve a small number of steps.</p> <p>Explain how product will appeal to an audience.</p> <p>Measure, mark out, cut and shape materials/components with accuracy.</p> <p>Cut and join with accuracy to ensure a good-quality finish to the product.</p> <p>Apply a range of finishing techniques.</p> <p>Sew using a range of different stitches,</p> <p>Pin, sew and stitch materials together create a product.</p> <p>Begin to be resourceful with practical problems.</p> <p>Weigh and measure accurately (time, dry ingredients, liquids).</p>	<p>Select appropriate tools, materials, components and techniques precisely.</p> <p>Produce suitable lists of tools, equipment, materials needed, considering constraints, and whether the product is fit for purpose; explain choices, considering functionality and aesthetics.</p> <p>Create, follow, and adapt detailed step-by-step plans.</p> <p>Explain how a product will appeal to an audience: make changes to improve quality.</p> <p>Accurately measure, mark out, cut and shape materials/components</p> <p>Accurately assemble, join and combine materials/components.</p> <p>Use techniques that involve a number of steps.</p> <p>Accurately apply a range of finishing techniques</p> <p>Assemble components make working models.</p> <p>Make modifications as they go along.</p> <p>Construct products using permanent joining techniques.</p> <p>Achieve a quality product.</p>

		Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens.	Be resourceful with practical problems
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End of KS2 Expectation

- follow procedures for safety and hygiene
- use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

In early KS2 pupils should also:

- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy
- apply a range of finishing techniques, including those from art and design, with some accuracy

End of KS2 Expectation Gymnastics - by the end of KS2 most children will be able to:

- accurately measure, mark out, cut and shape materials and components
- accurately assemble, join and combine materials and components
- accurately apply a range of finishing techniques, including those from art and design
- use techniques that involve a number of steps
- demonstrate resourcefulness when tackling practical problems



Progression of skills and knowledge in Evaluating- KS2

Year 3	Year 4 -	Year 5 -	Year 6 -
<p>Evaluate their product against original design criteria e.g. how well it meets its intended purpose.</p> <p>Indicate what could be changed to improve the design, considering how well they have been made, materials, whether they work, how they have been made, fit for purpose.</p> <p>Disassemble and evaluate familiar products.</p> <p>Learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products.</p> <p>Begin to understand by whom, when and where products were designed.</p>	<p>Refer to design criteria while designing and making.</p> <p>Evaluate their work both during and at the end of the assignment with the criteria, considering how well they've been made, materials, whether they work, how they have been made, fit for purpose etc.</p> <p>Evaluate their products carrying out appropriate tests beginning to explain how they could improve original design.</p> <p>Research whether products can be recycled or reused.</p> <p>Know about some inventors/ designers/ engineers/chefs/ manufacturers of ground-breaking products.</p> <p>Discuss by whom, when and where products were designed.</p> <div data-bbox="636 1287 992 1436"> <pre> graph TD Research --> Design Design --> Make Make --> Evaluate Evaluate --> Research </pre> </div>	<p>Evaluate quality of design while designing and making.</p> <p>Evaluate a product against the original design specification, considering appearance. how well they've been made, materials, whether they work, how they have been made, fit for purpose.</p> <p>Test and evaluate final product.</p> <p>Evaluate it personally and seek evaluation from others begin to evaluate how much products cost to make and how innovative they are.</p> <p>Research how sustainable materials are.</p> <p>Talk about some key inventors/ designers/ engineers/ chefs/ manufacturers of ground-breaking products.</p>	<p>Evaluate quality of design while designing and making; is it fit for purpose?</p> <p>Keep checking design is best it can be</p> <p>Evaluate their products, against specifications, identifying strengths and areas for development, considering how well they have been made, materials, whether they work, how they have been made the effect different resources may have had and carrying out appropriate tests.</p> <p>Record their evaluations using drawings with labels.</p> <p>Evaluate against their original criteria and suggest ways that their product could be improved.</p> <p>Evaluate how much products cost to make and how innovative they are.</p> <p>Research and discuss how sustainable materials are.</p> <p>Consider the impact of products beyond their intended purpose .</p> <p>Discuss some key inventors/designers/ engineers/ chefs/manufacturers.</p>

End of KS2 Expectation

- identify the strengths and areas for development in their ideas and products
- consider the views of others, including intended users, to improve their work
- how well products have been designed
- how well products have been made
- why materials have been chosen
- what methods of construction have been used
- how well products work
- how well products achieve their purposes
- how well products meet user needs and wants

In early KS2 pupils should also:

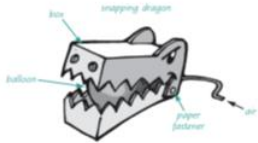
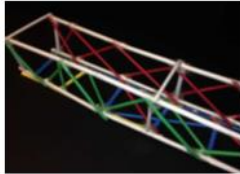
- refer to their design criteria as they design and make
- use their design criteria to evaluate their completed products
- who designed and made the products
- where products were designed and made
- when products were designed and made
- whether products can be recycled or reused

End of KS2 Expectation- by the end of KS2 most children will be able to:

- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- evaluate their ideas and products against their original design specification.
- how much products cost to make
- how innovative products are
- how sustainable the materials in products are
- what impact products have beyond their intended purpose



Progression of skills and knowledge in Technical Knowledge- Materials/Structures - KS2

Year 3 -	Year 4 -	Year 5	Year 6 -
<p>Use appropriate materials.</p> <p>Work accurately to make cuts and holes.</p> <p>Join materials.</p> <p>Begin to make strong structures.</p> <p>To know more sophisticated methods for stiffening/strengthening structures.</p> <p>To know what a net is.</p> <p>To know the names of more complex 3D shapes.</p> <p>To know which tools are appropriate for cutting and scoring materials.</p> <p>To know how to test a material's strength.</p> <p>To know technical vocabulary relevant to the project (see vocab below).</p> <p>To know how to use a range of tools i.e., junior hacksaws, G-clamps, bench hooks, hand drills safely.</p>	<p>Measure carefully to avoid mistakes.</p> <p>Continue working on product, even if original did not work.</p> <p>Make a strong, stiff structure.</p> <p>To know more sophisticated methods for stiffening/strengthening structures.</p> <p>To know which tools are appropriate for cutting and scoring materials.</p> <p>To know how to test a material's strength.</p> <p>To know technical vocabulary relevant to the project (see vocab below).</p>	<p>Select materials carefully, considering intended use of product and appearance.</p> <p>Explain how product meets design criteria.</p> <p>Measure accurately enough to ensure precision.</p> <p>Ensure product is strong and fit for purpose.</p> <p>To know which materials are best suited to stiffen and reinforce by selecting them due to their properties.</p> <p>To know how to use a range of tools i.e., junior hacksaws, G-clamps, bench hooks, hand drills safely.</p> <p>To know technical vocabulary relevant to the project (see vocab below)</p>	<p>Select materials carefully, considering intended use of the product, the aesthetics and functionality.</p> <p>Explain how product meets design criteria.</p> <p>To know which shapes are the strongest and will support the most weight in a structure.</p> <p>To know how to stiffen, strengthen and reinforce a range of 3-D frameworks.</p> <p>To know how to use a range of tools i.e., junior hacksaws, G-clamps, bench hooks, hand drills safely.</p> <p>To know technical vocabulary relevant to the project (see vocab below)</p>
			


Vocabulary: Shell, structure, net, marking out, material, joining, three dimensional, stiff	Vocabulary: Assemble, prism, vertex, breadth, capacity, scoring, adhesives, reduce, reuse, recycle, corrugating, ribbing, laminating	Vocabulary: Stability, temporary, permanent, prototype, innovation, functional, design brief	Vocabulary: Reinforce, triangulation, stability, temporary, permanent, prototype, innovation, functional, design brief
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End of KS2 Expectation

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- how to use learning from science to help design and make products that work
- how to use learning from mathematics to help design and make products that work
- that materials have both functional properties and aesthetic qualities
- that materials can be combined and mixed to create more useful characteristics

End of KS2 Expectation - by the end of KS2 most children will be able to:

Progression of skills and knowledge in Technical Knowledge/Mechanisms- KS2			
Year 3 -	Year 4 -	Year 5 -	Year 6
Technical knowledge Begin to try new/ different ideas. To know the difference between a fixed and loose pivot. To know how to use lever and linkage mechanisms. To know how to increase accuracy when measuring, marking out and cutting (i.e., measure in mm rather than cm or inches). Alter product after checking, to make it better.	Technical knowledge •To know where loose and fixed pivots are used in products To know how to use lever and linkage mechanisms. Use pneumatics to create movement. To know how to increase accuracy when measuring, marking out and cutting (i.e., measure in mm rather than cm or inches)	Technical knowledge: To know what a gear is. To know what a pulley is. To know that gears and pulleys can be used to speed up, slow down or change the direction of movement. To know how to accurately draw a diagram. Refine product after testing. Grow in confidence about trying new / different ideas.	Technical knowledge To know that mechanical and electrical systems have an input, process, and output. To know what a gear is. To know what a pulley is. To know that gears and pulleys can be used to speed up, slow down or change the direction of movement. To know how to accurately draw an exploded diagram.

<p>Select appropriate tools / techniques.</p> <p>To know technical vocabulary relevant to the project (see vocabulary below).</p> <p>Wider knowledge</p> <p>To know what a design brief is</p> <p>Vocabulary:</p> <p>Loose pivot, fixed pivot, system, input, process.</p> 	<p>Select most appropriate tools / techniques.</p> <p>Explain alterations to product after checking it.</p> <p>Grow in confidence about trying new / different ideas.</p> <p>To know technical vocabulary relevant to the project (see vocabulary below).</p> <p>Wider Knowledge</p> <p>To know why levers are used to lift loads</p> <p>To know where levers and linkages are used in commercial products or industry.</p> <p>Vocabulary:</p> <p>Loose pivot, fixed pivot, system, input, process, output, linear, rotary, reciprocating, innovative, appealing, linkage, oscillating.</p>	<p>Begin to use cams, pulleys or gears to create movement.</p> <p>Know technical vocabulary relevant to the project (see vocabulary below).</p> <p>Wider knowledge</p> <p>To know where pulleys and gears are used in commercial products and industry.</p> <p>To know what forces are acting on pulleys and gears (i.e., friction, gravity).</p> <p>To know whether a gear will turn clockwise or anti-clockwise.</p> <p>Vocabulary:</p> <p>Pulley, gear, driver, follower, rotation, motor, belt, spindle, ratio, transmit, annotated drawings, exploded diagrams, functionality.</p>	<p>To know technical vocabulary relevant to the project (see vocabulary below).</p> <p>Wider knowledge</p> <p>To know how ratio affects speed of rotation.</p> <p>Refine product after testing, considering aesthetics, functionality, and purpose.</p> <p>Incorporate hydraulics and pneumatics</p> <p>Be confident to try new / different ideas.</p> <p>Use cams, pulleys, and gears to create movement.</p> <p>Vocabulary:</p> <p>Transmit, annotated drawings, exploded diagrams, functionality, motor, circuit, switch,</p>
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End of KS2 Expectation

- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- that mechanical and electrical systems have an input, process and output
- the correct technical vocabulary for the projects they are undertaking

In early KS2 pupils should also know:

- In early KS2 pupils should also know:
- how mechanical systems such as levers and linkages or pneumatic systems create movement
- how simple electrical circuits and components can be used to create functional products
- how to program a computer to control their products
- how to make strong, stiff shell structures
- that a single fabric shape can be used to make a 3D textiles product
- that food ingredients can be fresh, pre-cooked and processed



End of KS2 Expectation- by the end of KS2 most children will be able to:

- how mechanical systems such as cams or pulleys or gears create movement
- how more complex electrical circuits and components can be used to create functional products
- how to program a computer to monitor changes in the environment and control their products
- how to reinforce and strengthen a 3D framework

Progression of skills and knowledge in Technical Knowledge/Textiles- KS2

Year 3 -	Year 4 -	Year 5 -	Year 6
Technical knowledge Join different textiles in different ways. Choose textiles considering appearance and functionality. Begin to understand that a	Technical knowledge To know why designers might need to strengthen, stiffen, and reinforce existing fabrics. To know what constitutes a renewable/ sustainable material/fabric.	Technical knowledge To know that a 3D textile product can be made from a combination of accurately made pieces. To know when to combine multiple different fabrics to create a 3D product.	

simple fabric shape can be used to make a 3D textiles project.

Wider knowledge

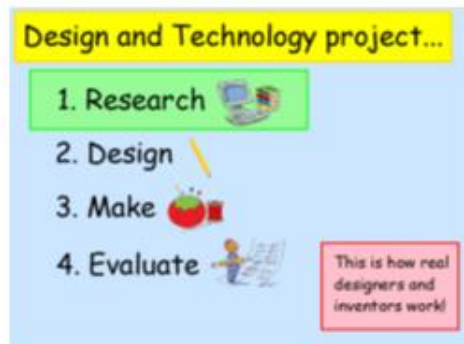
To know what an annotated sketch is.

To know why designers, use prototypes.

To know a designer, who uses fabrics in their work.

Vocabulary

Aesthetics, pinning, embroidery, running stitch, back stitch.



To know how to follow relevant health and safety protocols.

Think about the user when choosing textiles.

Think about how to make a product strong.

Begin to devise a template.

Explain how to join things in a different way.

Understand that a simple fabric shape can be used to make a 3D textiles project.

To know technical vocabulary relevant to the project (see vocabulary below).

Wider knowledge

To know what accuracy means and how it can be improved.

To know what an annotated sketch is.

To know why designers, use prototypes.

To know a range of designers who use fabrics in their work.

Vocabulary

To know how embroidery can embellish a product.

Think of a range of ways to join things.

To know when to use particular stitch types (including finishing stitches).

Think about the user and aesthetics. when choosing textiles.

Use own template.

To know how to follow relevant health and safety protocols.

Think carefully about what would improve a product.

Understand that a single 3D textiles project can be made from a combination of fabric shapes.

To know technical vocabulary relevant to the project (see vocabulary below).

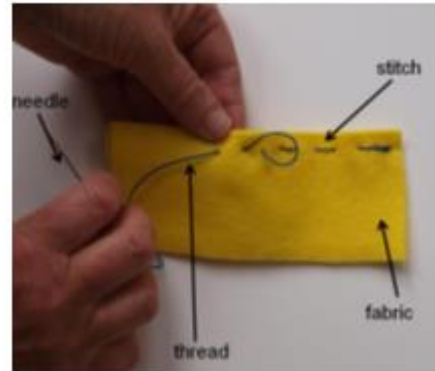
Wider Knowledge:

To know how to test fabrics in order to select them for use.

To know how to analyse existing products and report what



Aesthetics, pinning, embroidery, back stitch, blanket stitch, cross stitch



joining/fastening methods and multiple pieces have been used. To know some key dates in the development of fabric and textiles (i.e. 500-1000AD spinning wheel invented in India, 1562 first use of purl stitch in Spanish tomb, 1890 first pair of jeans by Levi Strauss).

Vocabulary:

Specification, tacking, working drawing, clasp, pinking shears, design criteria, hem, reinforce, stem stitch, satin stitch, blanket stitch, Applique, annotate, evaluate, innovation, functionality, renewable, authentic, chain stitch



End of KS2 Expectation

measure, mark out, cut and shape materials and components with some accuracy

• assemble, join and combine materials and components with some accuracy



- apply a range of finishing techniques, including those from art and design, with some accuracy

End of KS2 Expectation- by the end of KS2 most children will be able to:

- accurately measure, mark out, cut and shape materials and components
- accurately assemble, join and combine materials and components
- accurately apply a range of finishing techniques, including those from art and design
- use techniques that involve a number of steps
- demonstrate resourcefulness when tackling practical problems



Progression of skills and knowledge in Technical Knowledge/Food & Nutrition- KS2

Year 3 -	Year 4 -	Year 5 -	Year 6
<p>Technical knowledge</p> <p>To know how to chop a wider range of foods using different techniques i.e., claw grip, bridge grip.</p> <p>To know how to use sensory information to evaluate a variety of ingredients.</p> <p>To know how to combine foods using different utensils i.e., whisk, spatula.</p> <p>To know relevant health and safety procedures when handling and preparing foods</p> <p>Explain how food and drink are needed for active/healthy bodies.</p>		<p>Technical knowledge</p> <p>To know some more advance methods for mixing ingredients i.e., rubbing in.</p> <p>Use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p> <p>Explain how to be safe / hygienic and follow own guidelines.</p> <p>Present product well - interesting, attractive, fit for purpose.</p> <p>Begin to understand seasonality of foods.</p> <p>Understand food can be grown,</p>	

Prepare and cook some dishes safely and hygienically.
Grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.
To know technical vocabulary relevant to the project (see vocab below)

Wider knowledge

To know about a range of fresh and processed foods for their product
To know whether foods are grown, reared or caught.

Vocabulary:

Healthy & Varied Diet:

Texture, taste, appearance, preference, greasy, moist, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested



reared or caught in the UK and the wider world.

Describe how recipes can be adapted to change appearance, taste, texture, aroma

Explain how there are different substances in food / drink needed for health

To know how to follow a recipe.

To know how to measure ingredients accurately using different units.

To know how to select appropriate utensils for specific jobs.

To know how to cut, shape and knead dough.

Prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source.

Wider knowledge

To know about organic foods and the impact of these.

To know about organic foods and the impact of these

Vocabulary:

Celebrating Culture & Seasonality:



		Ingredients, yeast, dough, wholemeal, unleavened, baking soda, spice, herbs, carbohydrate, sugar, fat, protein, vitamins, nutrients, gluten, allergy, intolerance, savoury, seasonality, pour, mix, kneed, whisk, beat, combine, fold, rubbing in	
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End of KS2 Expectation

- that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world
- how to prepare and cook a variety of predominantly savoury dishes safely and hygienically
- including, where appropriate, the use of a heat source
- how to use a range of techniques such as peeling, chopping, slicing, grating, mixing,
- spreading, kneading and baking

In early KS2 pupils should also know:

- that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate
- that to be active and healthy, food and drink are needed to provide energy for the body



In late KS2 pupils should also know:

- that seasons may affect the food available
- how food is processed into ingredients that can be eaten or used in cooking

End of KS2 Expectation- by the end of KS2 most children will be able to:

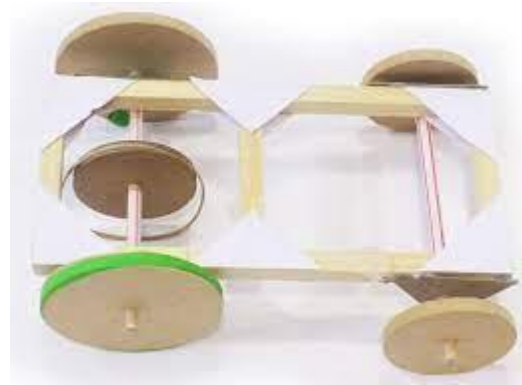
- that recipes can be adapted to change the appearance, taste, texture and aroma
- that different food and drink contain different substances - nutrients, water and fibre - that are needed for health
- that a recipe can be adapted by adding or substituting one or more ingredients

Progression of skills and knowledge in Technical Knowledge/Electrical Systems- KS2

Year 3 -	Year 4 -	Year 5 -	Year 6
	<p>Technical knowledge</p> <p>To know what an electrical circuit is</p> <p>To know a range of simple electrical components and their functions, such as a bulb, buzzer and switch</p> <p>To know how to construct a simple series circuit.</p> <p>To know how to make a range of simple secure connections (twisting, wires together, wrapping ends, taping over, connecting block)</p> <p>To know technical vocabulary relevant to the project (see vocabulary below)</p> <p>Wider knowledge:</p> <p>To know a range of places electrical systems are used (i.e. lighting in a house, display signs, traffic lights)</p>		<p>Technical knowledge</p> <p>To know how to incorporate simple self-made switches in a circuit.</p> <p>To know how to test components in more complex circuits (series and parallel)</p> <p>To know technical vocabulary relevant to the project (see vocabulary below)</p> <p>To know how simple switches can be made.</p> <p>To know how to assess faults in their own electrical systems.</p> <p>To know how to test components in a simple series circuit.</p> <p>Wider knowledge:</p> <p>To know why materials, make good conductors and insulators.</p> <p>To know how electrical systems are controlled (i.e., flow charts).</p>

Vocabulary:

User, fault, toggle switch, insulator, conductor, battery holder, crocodile clip
Series circuit, connection, push-to make switch, push-to-break switch, innovative, appealing, control box, input device, output device, system



Vocabulary:

Parallel circuit, light emitting diode, monitor, flowchart, design
specification, reed switch, tilt switch, Light dependent resistor, interface control, micro switch, latching switch.

End of KS2 Expectation

- how to use learning from science to help design and make products that work
- how to use learning from mathematics to help design and make products that work
- that mechanical and electrical systems have an input, process and output
- the correct technical vocabulary for the projects they are undertaking

In early KS2 pupils should also know:

- how simple electrical circuits and components can be used to create functional products

End of KS2 Expectation- by the end of KS2 most children will be able to:

- how more complex electrical circuits and components can be used to create functional products