Ash Grove Primary Academy
Design Technology Progression Grid

At Ash Grove our Design and Technology curriculum aims to ensure that all pupils:

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- Critique, evaluate and test their ideas and products and the work of others.
- Understand and apply the principles of nutrition and learn how to cook.

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts.

When designing and making, pupils should be taught to:

At Key Stage One:	At Key Stage Two:
Design	
• design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	• use research and develop design criteria to inform the design of innovative, functional,appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
Make	
• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	• select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • 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
Evaluate	
• explore and evaluate a range of existing products • evaluate their ideas and products against design criteria	• investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world
Technical Knowledge	
• build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	• apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys,cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products.
Cooking and nutrition	
• use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from	• understand and apply the principles of a healthy and varied diet • prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques • understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

DT Tier 3 Vocabulary @ KS1:	DT Tier 3 Vocabulary @ LKS2:	DT Tier 3 Vocabulary @ UKS2:
design, make, evaluate plan, investigate tools, equipment, materials	**design criteria, purpose, planning, designer, design brief, prototype, pattern, user, annotated sketch, test strengthen, stiffen, reinforce, improve, disassemble, product**	**design specification, record, evaluation improve, strengths, areas for development**

The Key Stage One curriculum builds on the foundation work completed throughout Early Years. The following progression highlights 'expected' level for areas of the DT curriculum:

Personal, Social and Emotional Development	Physical Development	Expressive Arts and Design
ELG: Managing Self Children at the expected level of development will: - Be confident to try new activities and show independence, resilience and perseverance in the face of challenge; - Manage their own basic hygiene and personal needs, including understanding the importance of healthy food choices. **ELG: Building Relationships** - Work and play cooperatively and take turns with others	**ELG: Fine Motor Skills** Children at the expected level of development will: - Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases - Use a range of small tools, including scissors, paint brushes and cutlery; - Begin to show accuracy and care when drawing.	**ELG: Creating with Materials** Children at the expected level of development will: - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function - Share their creations, explaining the process they have used - Make use of props and materials when role playing characters in narratives and stories

The following progression highlights 'expected' level for areas of the DT curriculum:

Food

	Key Stage One		Lower Key Stage Two		Upper Key Stage Two	
	Cycle A	**Cycle B**	**Cycle A**	**Cycle B**	**Cycle A**	**Cycle B**
	(Summer 2) **Healthy Heart Sensational Salad** Make healthy salads, linked to 'Healthy Lifestyle' Science topic.	**(Summer 2)** **National Favourites** Make UK traditional food, linked to 'UK' Geography topic.	**(Spring 1)** **Shang Feast** Make Shang food, linked to 'Shang Dynasty' History topic.	**(Autumn 1)** **Italian Feasts** Make Italian food, linked to 'Roman Britain' History topic.	**(Summer 1)** **Eastern Delights** Make Middle Eastern food, linked to 'Middle Eastern Development' History topic.	**(Summer 1)** **Short Rations** Make WWII rations food, linked to 'Twentieth Century Conflict' History topic.
Knowledge	**Technical knowledge** • Know how to safely use simple cutting tools (ie knife) to prepare soft fruit and vegetables. • Know how to safely peel, chop, slice and grate foods. • Know simple health and safety procedures. **Wider knowledge** • Know where a range of fruit and vegetables come from. • Know the principles of a varied diet.	**Technical knowledge** • Know how to prepare simple dishes safely and hygienically. • Know how to safely use techniques such as cutting, peeling and grating with greater confidence and independency. • Know simple health and safety procedures. **Wider knowledge** • Know where a range of traditional UK food come from.	**Technical knowledge** • Know how to chop a wider range of foods using different techniques i.e. claw grip, bridge grip. • Know how to use sensory information to evaluate a variety of ingredients • Know how to combine foods using different utensils i.e. whisk, spatula • Know relevant health and safety procedures when handling and preparing foods **Wider knowledge** • Know about a range of fresh and processed foods for their product • Know whether foods are grown, reared or caught	**Technical knowledge** • Know how to chop a wider range of foods using different techniques i.e. claw grip, bridge grip. • Know how to measure ingredients using simple measures ie cup/tblsp • Know how to combine foods using different utensils i.e. whisk, spatula • Know relevant health and safety procedures when handling and preparing foods **Wider knowledge** • Know about a range of fresh and processed foods for their product • Know whether foods are grown, reared or caught • Know about fair trade foods • Know about one key chef and their contribution to healthy eating i.e. Jamie Oliver – healthy schools	**Technical knowledge** • Know some more advanced methods for mixing ingredients i.e. rubbing in • Know how to measure ingredients accurately using different units • Know how to follow a recipe • Know how to select appropriate utensils for specific jobs. • Know how to cut, shape and knead dough **Wider knowledge** • Know about a range of chefs and their individual styles of cooking • Know about organic foods and the impact of these	**Technical knowledge** • Know some more advanced methods for mixing ingredients i.e. rubbing in • Know how to measure ingredients accurately using different units • Know how to follow a recipe • Know how to select appropriate utensils for specific jobs. • Know how to cut, shape and knead dough **Wider knowledge** • Know about a range of chefs and their individual styles of cooking • Know about organic foods and the impact of these
Developing, Planning and Communicating Ideas.	• Draw on their own experience to help generate ideas • Suggest ideas and explain what they are going to do • Identify a target group for what they intend to design and make • Develop their design ideas applying findings from their earlier research	• Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation, drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria • Make simple drawings and label parts	• Generate ideas for an item, considering its purpose and the user/s • Identify a purpose and establish criteria for a successful product. • Plan the order of their work before starting • Explore, develop and communicate design proposals by modelling ideas • Make drawings with labels when designing	• Generate ideas, considering the purposes for which they are designing • Make labelled drawings • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail • Evaluate products and identify criteria that can be used for their own designs	• Generate ideas through brainstorming and identify a purpose for their product • Draw up a specification for their design • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail • Use results of investigations, information sources, including ICT when developing design ideas	• Communicate their ideas through detailed labelled drawings • Develop a design specification • Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways • Plan the order of their work, choosing appropriate materials, tools and techniques
Working with tools, equipment, materials and components to make quality products	• Select and use appropriate fruit and vegetables, processes and tools • Make their design using appropriate techniques • Observe basic food hygiene procedures: washing hands, washing fruit and veg, cleaning surfaces before and after preparing food. • Use a knife and chopping board to neatly chop ingredients. • Use a spoon to add condiments using a knife and grater • Peel, chop, slice and grate foods using a knife and grater • Serve food in an appealing way.	• Begin to select tools and materials; use vocab to name and describe them • Follow safe procedures for food safety and hygiene • Measure ingredients with some accuracy • Use utensils safely and appropriately • Use a knife and chopping board to neatly chop ingredients. • Use a spoon to add and mix ingredients • Peel, chop, slice and grate foods using a knife and grater • Serve food in an appealing way	• Select utensils and techniques for making their product • Demonstrate hygienic food preparation and storage • Work safely and accurately with a range of simple utensils • Think about their ideas as they make progress and be willing to change things if this helps them improve their work • Measure ingredients with more accuracy using simple measures ie cup/tblsp • Chop a wider range of foods using different techniques i.e. claw grip, bridge grip. • Combine ingredients accurately using different utensils i.e. whisk, spatula • Use finishing techniques to improve the appearance of their product	• Select appropriate tools and techniques for making their product • Demonstrate hygienic food preparation and storage • Work safely and accurately with a range of simple utensils • Think about their ideas as they make progress and be willing to change things if this helps them improve their work • Measure ingredients with more accuracy using simple measures ie cup/tblsp • Chop a wider range of foods using different techniques i.e. claw grip, bridge grip. • Combine ingredients accurately using different utensils i.e. whisk, spatula • Use finishing techniques to improve the appearance of their product	• Select appropriate utensils and techniques for specific jobs. • Make modifications as they go along • Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens • Use different utensils and equipment safely and accurately • Use more advanced methods for mixing ingredients i.e. rubbing in • Weigh and measure ingredients accurately using different units • Follow a recipe • Cut, shape and knead dough • Achieve a quality product	• Select appropriate utensils and techniques for specific jobs. • Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens • Make modifications as they go along • Use different utensils and equipment safely and accurately • Use more advanced methods for mixing ingredients i.e. rubbing in • Weigh and measure ingredients accurately using different units • Follow a recipe • Cut, shape and knead dough • Achieve a quality product

Evaluating Processes and Products	• Evaluate their product by asking questions about what they have made and how they have gone about it • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make	• Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Talk about their ideas, saying what they like and dislike about them	• Evaluate their product against original design criteria e.g. how well it meets its intended purpose • Evaluate their work both during and at the end of the assignment • Evaluate their products carrying out appropriate tests	• Evaluate their product against original design criteria e.g. how well it meets its intended purpose • Evaluate their work both during and at the end of the assignment • Evaluate their products carrying out appropriate tests	• Evaluate a product against the original design specification and suggest ways that their product could be improved • Evaluate it personally and seek evaluation from others • Record their evaluations using drawings with labels	• Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved • Evaluate it personally and seek evaluation from others
Vocabulary	Fruit Vegetables Healthy diet Ingredients Knife, spoon, fork, peeler, grater, chopping board Soft, hard, juicy, crunchy, sticky, smooth, sharp, crisp, sweet, sour, flesh, skin, seed, pip, core Core, slice, peel, chop, cut, squeeze Plan, investigate, taste, arrange Design, evaluate, criteria	Traditional food Ingredients Weighing scales, jug, knife, spoon, fork, peeler, grater, chopping board, rolling pin Soft, hard, crunchy, sticky, smooth, sharp, crisp, sweet, sour Measure, mix, stir, roll, bake, set, cut, peel, grate Plan, investigate, taste, arrange Design, evaluate, criteria	Shang food Fresh food Processed food Hygienic food preparation/storage Techniques Ingredients Edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet Utensils, whisk, spatula Cup, tblsp Claw grip, bridge grip. Measure, chop, combine Finishing techniques Design criteria, purpose, planning, user, annotated sketch, test, sensory evaluations	Italian food Fresh food Fair trade Hygienic food preparation/storage Techniques Ingredients Edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet Utensils, whisk, spatula Cup, tblsp Claw grip, bridge grip. Measure, chop, combine Finishing techniques Design criteria, purpose, planning, user, annotated sketch, test, sensory evaluations	Middle Eastern food Organic food Impact Recipe Dough Utensils Cut, shape, knead Rubbing in Weigh, measure Design specification Record, evaluate, evaluation, improve	Rations food Organic food Impact Recipe Dough Utensils Cut, shape, knead Rubbing in Weigh, measure Design specification Record, evaluate, evaluation, improve, strengths, areas for development
Expectation of skills progression	**KS1 Cycle A:**  	**KS1 Cycle B:**  	**LKS2 Cycle A:**	**LKS2 Cycle B:**	**UKS2 Cycle A:**	**UKS2 Cycle B:**

Textiles

	Key Stage One		Lower Key Stage Two		Upper Key Stage Two	
	Cycle A	**Cycle B**	**Cycle B**	**Cycle B**	**Cycle A**	**Cycle B**
	(Autumn 1) **Soft Toy** Make a soft toy, linked to 'Toys' History topic.	**(Autumn 1)** **Perfect Poppy** Make a poppy, linked to 'War and Remembrance' History topic.	**(Autumn 2)** **3D Soft Christmas Decoration** Make a 3D soft Christmas decoration, linked to RE topic.	**(Summer 1)** **Weaving** Make a weaving product, linked to 'Vikings' History topic.	**(Autumn 1)** **Appliqué Art** Make Appliqué artwork of African animals, linked to 'The Benin Kingdom' History topic.	**(Spring 2)** **Banners and Symbols** Make Banners and Symbols, linked to the 'Civil Rights Movement' History topic
Knowledge	**Technical knowledge** • Know what a template is • Know how a simple 3D textile product is made • Know how to join two pieces of fabrics using different joining techniques (gluing, stapling, stitching) • Know a range of finishing techniques available • Know how to follow relevant health and safety protocols **Wider knowledge** • Know the names of simple fabric products (i.e. cushion, jumper, blanket) • Know why simple fabrics are chosen based on their properties (i.e. wool is used for a blanket because it is soft and warm)	**Technical knowledge** • Know why designers use templates • Know when to use certain fabrics based on their suitability to the product • Know how to use simple stitch techniques • Know which finishing technique to use depending upon the required effect • Know how to follow relevant health and safety protocols **Wider knowledge** • Know the names of at least one designer of fabric products (i.e. Levi Strauss and denim jeans, William Morris - floral interior design patterns, Lucienne Day – links to WW2 and dress making) • Know where simple fabrics come from/are made of (i.e. wool from sheep, cotton from cotton plants, hessian made from fibres of jute plant) • Know what a design evaluation is	**Technical knowledge** • Know how to strengthen, stiffen and reinforce existing fabrics • Know how to securely join two pieces of fabric together using a range of stitches • Know why designers use patterns • Know what seam allowances are • Know how to follow relevant health and safety protocols **Wider knowledge** • Know how different fabrics are constructed (i.e. woven materials, spun materials, knitted materials) • Know what a design brief is • Know what a prototype is • Know why designers evaluate their designs	**Technical knowledge** • Know how to weave • Know why designers might need to strengthen, stiffen and reinforce existing fabrics • Know how/when to use decorative stitches to finish a product • Know what constitutes a renewable/sustainable material/fabric • Know how to follow relevant health and safety protocols **Wider knowledge** • Know what accuracy means and how it can be improved • Know what an annotated sketch is • Know why designers use prototypes • Know a range of designers who use fabrics in their work	**Technical knowledge** • Know how to do appliqué • Know that a 3D textile product can be made from a combination of accurately made pieces • Know when to combine multiple different fabrics to create a 3D product • Know how embroidery can embellish a product • Know when to use particular stitch types (including finishing stitches) • Know how to follow relevant health and safety protocols **Wider knowledge** • Know what a questionnaire is and how it can help with product design (children could create a simple questionnaire which could then be used to form a design brief) • Know how to test fabrics in order to select them for use • Know how to analyse existing products and report what joining/fastening methods and multiple pieces have been used • Know some key dates in the development of fabric and textiles	**Technical knowledge** • Know that a 3D textile product can be made from a combination of accurately made pieces • Know when to combine multiple different fabrics to create a 3D product • Know how embroidery can embellish a product • Know when to use particular stitch types (including finishing stitches) • Know how to follow relevant health and safety protocols **Wider knowledge** • Know what a questionnaire is and how it can help with product design (children could create a simple questionnaire which could then be used to form a design brief) • Know how to test fabrics in order to select them for use • Know how to analyse existing products and report what joining/fastening methods and multiple pieces have been used • Know some key dates in the development of fabric and textiles (i.e. 6000BC woven textiles used to wrap the dead, 500-1000AD spinning wheel invented in India, 1562 first use of purl stitch in Spanish tomb, 1890 first pair of jeans by Levi Strauss)
Developing, Planning and Communicating Ideas.	• Draw on their own experience to help generate ideas • Suggest ideas and explain what they are going to do • Identify a target group for what they intend to design and make • Model their ideas on paper • Develop their design ideas applying findings from their earlier research	• Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation, drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria • Make simple drawings and label parts	• Generate ideas for an item, considering its purpose and the user/s • Identify a purpose and establish criteria for a successful product. • Plan the order of their work before starting • Explore, develop and communicate design proposals by modelling ideas • Make drawings with labels when designing	• Generate ideas, considering the purposes for which they are designing • Make labelled drawings from different views showing specific features • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail • Evaluate products and identify criteria that can be used for their own designs	• Generate ideas through brainstorming and identify a purpose for their product • Draw up a specification for their design • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail • Use results of investigations, information sources, including ICT when developing design ideas	• Communicate their ideas through detailed labelled drawings • Develop a design specification • Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways • Plan the order of their work, choosing appropriate materials, tools and techniques

Working with tools, equipment, materials and components to make quality products	• Make their design using appropriate techniques • With help measure, mark out, cut and shape a range of materials • Use tools eg scissors and a needle safely • Cut, shape and join fabric to make a simple soft toy. • Use basic sewing techniques. • Use simple finishing techniques to improve the appearance of their product	• Begin to select tools and materials; use vocab to name and describe them • Measure, cut and score with some accuracy • Use tools eg scissors and a needle safely and appropriately • Cut, shape and join fabric to make a poppy. • Use basic sewing techniques. • Choose and use appropriate finishing techniques	• Select tools and techniques for making their product • Think about their ideas as they make progress and be willing to change things if this helps them improve their work • Measure, mark out, cut, score and assemble fabric with more accuracy • Work safely and accurately with a range of simple tools • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT	• Select appropriate tools and techniques for making their product • Use simple graphical communication techniques • Measure, tape or pin, cut and join fabric with some accuracy • Sew using a range of different stitches, weave and knit • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT	• Select appropriate materials, tools and techniques • Make modifications as they go along • Measure and mark out accurately • Use skills in using different tools and equipment safely and accurately • Cut and join with accuracy to ensure a good-quality finish to the product	• Select appropriate tools, materials, components and techniques • Make modifications as they go along • Use tools safely and accurately • Pin, sew and stitch materials together create a product • Achieve a quality product
Evaluating Processes and Products	• Evaluate their product by asking questions about what they have made and how they have gone about it • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make	• Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Talk about their ideas, saying what they like and dislike about them	• Evaluate their product against original design criteria e.g. how well it meets its intended purpose • Disassemble and evaluate familiar products	• Evaluate their work both during and at the end of the assignment • Evaluate their products carrying out appropriate tests	• Evaluate a product against the original design specification • Record their evaluations using drawings with labels • Evaluate it personally against their original criteria and seek evaluation from others - suggest ways that their product could be improved	• Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate it personally against their original criteria and seek evaluation from others - suggest ways that their product could be improved
Vocabulary	Fabric, soft toy, wool, felt, material Template Join, glue, staple, stitch Measure, mark out, shape, sew Tool, scissors, needle Design, make, evaluate	Poppy, fabric, cotton, hessian, wool Designer, template Stitch, measure, cut, shape, join, score Tool, scissors, needle Design, discuss, observe, draw, label, model, evaluation	3D Christmas decoration, fabric Woven, spun, knitted Purpose, criteria, user, plan, order Pattern, designer, design brief, prototype Model, drawing, label Join, stitch, seam allowance, tool Strengthen, stiffen, reinforce, improve Disassemble, evaluate, product	Weaving, fabric Renewable, sustainable Purpose, design, designer, prototype, annotated sketch, accuracy, labelled drawings, different views, specific features Weave, sew, knit, decorative stitches Measure, tape, pin, cut, join Strengthen, stiffen, reinforce, improve Alternative method, evaluate, test	Appliqué, 3D textile product, pieces, fabric Purpose, design specification, criteria, Questionnaire, product design Tools, equipment, techniques Measure, mark out, cut, join Combine, embroidery, embellish Stitch, finishing stitches Joining/fastening method Record, labelled drawing Alternative method, evaluate, test, analyse, investigation, information sources, modification	Banner, symbol, 3D textile product, pieces, fabric Purpose, design specification, criteria, Questionnaire, product design Combine, embroidery, embellish Stitch, stem stitch, satin stitch finishing stitches, hem, reinforce Joining/fastening method, tacking, pin, sew Clasp, pinking shears Record, labelled drawing Modification, evaluate, test, analyse, investigation, information sources,
Expectation of skills progression	**Year One:**  	**Year Two:** 	**LKS2 Cycle A:**	**LKS2 Cycle B:**	**UKS2 Cycle A:**	**UKS2 Cycle B:**

Construction

	Key Stage One		Lower Key Stage Two		Upper Key Stage Two	
	Cycle A	**Cycle B**	**Cycle A**	**Cycle B**	**Cycle A**	**Cycle B**
	(Spring 1) **Moving Vehicle** Make a moving vehicle, linked to 'Travel and Transport' History topic.	**(Summer 1)** **Tudor House** Make a Tudor house, linked to 'The Great Fire of London' History topic.	**(Spring 2)** **Telescopes and Periscopes** Make a telescope and periscope, linked to 'Space: Solar System, Eclipses, Astronomy' Science topic.	**(Spring 2)** **Levers, Cams and Pivots** Make a Lever, cams and pivot, linked to ' ' History topic**.**	**(Spring 2)** **Biome in a Bottle** Make a biome, linked to 'Biomes' Geography topic.	**(Autumn 2)** **Pulleys and Hoists** **Shift That Coal** Make a pulley and hoist, linked to 'Local Field Work: Mining' Geography topic.
Knowledge	**Technical knowledge** • Know how to make freestanding structures stronger, stiffer and more stable • Know how to join some simple materials • Know a simple order of making a structure • Know some simple finishing techniques to complete their structure • Know the name of simple 2D shapes • Know technical vocabulary relevant to the project (see vocab) **Wider knowledge** • Know some strong/stiff structures (i.e. climbing frame, tower) • Know what materials are useful for strengthening or stiffening structures and why this is • Know some simple facts about an important structural engineer (i.e. Isambard Kingdom Brunel)	**Technical knowledge** • Know how to make freestanding structures stronger, stiffer and more stable • Know how to join some simple materials • Know a simple order of making a structure • Know some simple finishing techniques to complete their structure • Know the name of simple 2D shapes • Know technical vocabulary relevant to the project (see vocab) **Wider knowledge** • Know some strong/stiff structures (i.e. climbing frame, tower) • Know what materials are useful for strengthening or stiffening structures and why this is • Know some simple facts about an important structural engineer (i.e. Isambard Kingdom Brunel)	**Technical knowledge** • Know more sophisticated methods for stiffening/strengthening structures • Know what a net is • Know which tools are appropriate for cutting and scoring materials • Know how to test a material's strength • Know how to use CAD to develop a product • Know technical vocabulary relevant to the project (see vocab) **Wider knowledge** • Know why engineers use certain structures for certain purposes • Know how engineers solve design problems i.e. building Burji Khalifa in Dubai • Know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan)	**Technical knowledge** • Know more sophisticated methods for stiffening/strengthening structures • Know what a net is • Know the names of more complex 3D shapes • Know which tools are appropriate for cutting and scoring materials • Know how to test a material's strength • Know how to use CAD to develop a product • Know technical vocabulary relevant to the project (see vocab) **Wider knowledge** • Know why engineers use certain structures for certain purposes • Know how engineers solve design problems i.e. building Burji Khalifa in Dubai • Know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan)	**Technical knowledge** • Know how to stiffen, strengthen and reinforce a range of 3-D frameworks • Know which materials are best suited to stiffen and reinforce by selecting them due to their properties • Know which shapes are the strongest and will support the most weight in a structure • Know how to use a range of tools i.e. junior hacksaws, G-clamps, bench hooks, hand drills safely • Know technical vocabulary relevant to the project) see vocab) **Wider knowledge** • Know why engineers use complex structures for certain purposes • Know how engineers solve complex design problems i.e. building Burji Khalifa in Dubai • Know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan)	**Technical knowledge** • Know how to stiffen, strengthen and reinforce a range of 3-D frameworks • Know which materials are best suited to stiffen and reinforce by selecting them due to their properties • Know which shapes are the strongest and will support the most weight in a structure • Know how to use a range of tools i.e. junior hacksaws, G-clamps, bench hooks, hand drills safely • Know technical vocabulary relevant to the project (see vocab) **Wider knowledge** • Know why engineers use complex structures for certain purposes • Know how engineers solve complex design problems i.e. building Burji Khalifa in Dubai • Know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan)
Developing, Planning and Communicating Ideas.	• Draw on their own experience to help generate ideas • Suggest ideas and explain what they are going to do • Identify a target group for what they intend to design and make • Model their ideas in card and paper • Develop their design ideas applying findings from their earlier research	• Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation, drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria • Make simple drawings and label parts	• Generate ideas for an item, considering its purpose and the user/s • Identify a purpose and establish criteria for a successful product. • Plan the order of their work before starting • Explore, develop and communicate design proposals by modelling ideas • Make drawings with labels when designing	• Generate ideas, considering the purposes for which they are designing • Make labelled drawings from different views showing specific features • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail • Evaluate products and identify criteria that can be used for their own designs	• Generate ideas through brainstorming and identify a purpose for their product • Draw up a specification for their design • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail • Use results of investigations, information sources, including ICT when developing design ideas	• Communicate their ideas through detailed labelled drawings • Develop a design specification • Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways • Plan the order of their work, choosing appropriate materials, tools and techniques

Working with tools, equipment, materials and components to make quality products	• Make their design using appropriate techniques • With help measure, mark out, cut and shape a range of materials • Use tools eg scissors and a hole punch safely • Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape • Use simple finishing techniques to improve the appearance of their product	• Begin to select tools and materials; use vocab' to name and describe them • Measure, cut and score with some accuracy • Use hand tools safely and appropriately • Assemble, join and combine materials in order to make a product • Choose and use appropriate finishing techniques	• Select tools and techniques for making their product • Think about their ideas as they make progress and be willing to change things if this helps them improve their work • Measure, mark out, cut, score and assemble components with more accuracy • Work safely and accurately with a range of simple tools • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT	• Select appropriate tools and techniques for making their product • Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques • Use simple graphical communication techniques • Join and combine materials and components accurately in temporary and permanent ways • Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT	• Select appropriate materials, tools and techniques • Measure and mark out accurately • Use skills in using different tools and equipment safely and accurately • Cut and join with accuracy to ensure a good-quality finish to the product	• Select appropriate tools, materials, components and techniques • Assemble components, make working models • Make modifications as they go along • Use tools safely and accurately • Construct products using permanent joining techniques • Achieve a quality product
Evaluating Processes and Products	• Evaluate their product by asking questions about what they have made and how they have gone about it • Evaluate their product by discussing how well it works in relation to the purpose • Evaluate their products as they are developed, identifying strengths and possible changes they might make	• Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Talk about their ideas, saying what they like and dislike about them	• Evaluate their product against original design criteria e.g. how well it meets its intended purpose • Disassemble and evaluate familiar products	• Evaluate their work both during and at the end of the assignment • Evaluate their products carrying out appropriate tests	• Evaluate a product against the original design specification • Record their evaluations using drawings with labels • Evaluate it personally against their original criteria and seek evaluation from others - suggest ways that their product could be improved	• Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate it personally against their original criteria and seek evaluation from others - suggest ways that their product could be improved
Vocabulary	Vehicle, wheel, axle, axle holder, chassis, body, cab, Assemble, cut, join, shape, finishing, Fixed, free, moving, Mechanism, Names of tools, equipment and materials used, Design, make, evaluate, purpose, user, criteria, functional	Tudor house, structure, wall, tower, framework, Cut, fold, join, fix, Weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, Card, metal, wood, plastic, Circle, triangle, square, rectangle, cuboid, cube, cylinder, Design, make, evaluate, user, ideas, purpose, design criteria, product,	Telescope, periscope, components, mechanism, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating Measure, mark out, cut, shape, join, combine Stiffen, strengthen User, purpose, function, prototype, design criteria, innovative, appealing, design brief, labelled drawings, alternative method, evaluate, finishing techniques	Lever, cams, linkage, pivot, components, mechanism, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating Measure, mark out, cut, shape, join, combine Stiffen, strengthen User, purpose, function, prototype, design criteria, innovative, appealing, design brief, labelled drawings, alternative method, evaluate, finishing techniques	Biome Junior hacksaws, G-clamps, bench hooks, hand drills Measure, mark out, cut, join, assemble, construct, working model, modifications, temporary, permanent Stiffen, strengthen, reinforce User, purpose, design specification, design brief, annotated drawings, evaluate, improvements, modifications	Pulley, hoist, gear, driver, follower, rotation, motor, drive belt, spindle, exploded diagrams, functionality, mechanical system, process, design decisions, innovation, authentic Junior hacksaws, G-clamps, bench hooks, hand drills Assemble, construct, working model, modifications, temporary, permanent Stiffen, strengthen, reinforce User, purpose, design specification, design brief, annotated drawings, evaluate, improvements
Expectation of skills progression	**Year One:** 	**Year Two:** 	**LKS2 Cycle A:**	**LKS2 Cycle B:**	**UKS2 Cycle A:** 	**UKS2 Cycle B:**