Wrockwardine Wood CE Junior School

Design and Technology Unit Progression Document



When planning in DT, we aim to ignite the ability in all to 'Love, Laugh and Learn'. This is achieved through recognising the extraordinary and wondrous in everything that we plan across the rich DT curriculum. When coupled with our Christian values and Jesus's promise 'I have come to give life and life in all its fullness'. (John 10:10) we are able to provide the children with experiences that will inspire them and ultimately support them to flourish. Our Design and Technology offer supports the children's cultural capital as we are able to offer experiences and opportunities that they perhaps do not always have outside of the school community setting. It is with these experiences that we can show our children that we are loving out loud; supporting their development, fostering positive futures and opening their minds to a future without limits.

Whilst teaching Design and Technology, we intend to ensure the children secure substantive knowledge throughout their design and technology unit. Substantive knowledge in design and technology is based on the four key elements of the design process:

Design

- Know how to design a product that is purposeful, functional and appealing to a specific group.
- Make
- Know how to cut, join and finish a range of increasingly complex materials, ranging from paper to wood.

Evaluate

• Know how to investigate, evaluate and analyse a range of existing products and their own designs based on a specific design criteria.

Technical knowledge.

• Know how to apply their knowledge of specific materials to meet the criteria listed above in the design, make and evaluate stages.

Teaching these four elements will be achieved through carefully planned sequential learning built on previous year's learning.

In design and technology, disciplinary knowledge is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. Knowledge in design and technology will equip the children with the opportunity to explain how and why products have changed over time and how they might be further improved in the future. They can use their knowledge and understanding to suggest how existing products may be improved with the advances in modern technology. Children will demonstrate that they have the cultural capital to become global citizens in an ever changing and technologically advancing world.

Progression in the Lower Key Stage and Upper Key Stage is indicated with Green text throughout the document.

Design—Substantiative Knowledge				
Year 3	Year 4	Year 5	Year 5 / 6	Year 6
I know how to 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.	I know how to 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.	I know how to 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.	I know how to 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.	I know how to 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.
I know how to generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design:	I know how to generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design:	I know how to generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design:	I know how to generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design:	I know how to generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design:
I can identify the design features products that will appeal to consumers. I can use my knowledge of a broad range of existing products to help generate ideas. I can design innovative and appealing products that have a clear purpose and are aimed at a specific consumer. I can explain how particular parts of my product	I can identify the design features products that will appeal to consumers. I can use my knowledge of a broad range of existing products to help generate ideas. I can design innovative and appealing products that have a clear purpose and are aimed at a specific consumer. I can explain how particular parts of my product	I can use research to inform and develop design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; I can use my knowledge of a broad range of existing products to help generate my design ideas. I can design products that have a clear purpose and indicate the design features of my products that will appeal to the intended user	I can use research to inform and develop design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; I can use my knowledge of a broad range of existing products to help generate my design ideas. I can design products that have a clear purpose and indicate the design features of my products that will appeal to the intended user	I can use research (existing products and product research online) to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; I can use my knowledge of a broad range of existing products to help generate my design ideas. I can design products that have a clear purpose and indicate the design features of my products that will
 works. I can use annotated sketches to communicate my ideas. I can explore different initial ideas before coming up with a final design. I can start to explain my choice of materials and components. I can test my ideas out through using prototypes. I can use google forms to develop research to help my final design. I can develop and follow a simple design criteria. 	works. I can use annotated sketches and cross-sectional drawings to develop and communicate their ideas; I can explore different initial ideas before coming up with a final design. I can start to explain my choice of materials and components including function and aesthetics I can test my ideas out through using prototypes. I can use computer-aided design to develop and communicate their ideas (Silhouette).	I can explain how particular parts of my product works, using annotated sketches, cross-sectional drawings and to develop and communicate my ideas. I can generate a range of design ideas and clearly communicate final designs. I can work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.	I can explain how particular parts of my product works, using annotated sketches, cross-sectional drawings and to develop and communicate my ideas. I can generate a range of design ideas and clearly communicate final designs. I can work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.	appeal to the intended user. I can explain how particular parts of my products that will works, using annotated sketches, cross-sectional drawings and exploded diagrams to include CAD designs on TINKERCAD to develop and communicate their ideas. I can generate a range of design ideas and clearly communicate final designs (through presentation) I can consider the availability and costings of resources when planning out designs. I can work in a broad range of relevant contexts, for
I can develop and follow a simple design criteria I can work in a broader range of relevant contexts, the home and food industry.	I can develop and follow a simple design criteria I can work in a broader range of relevant contexts, the home, school and wider environment.			example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.

Make—Substantiative Knowledge				
Year 3	Year 4	Year 5	Year 5 / 6	Year 6
I know how to select from and use a wider range of tools and equipment to perform practical tasks I know how to select from and use a wider range of materials and components and ingredients,	I know how to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.	I know how to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.	I know how to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.	I know how to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
according to their functional properties and aesthetic qualities. I can plan with growing confidence, carefully select from a range of tools .	I know how to 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.	I know how 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.	I know how 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.	I know how 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.
I can select from a range of materials and components according to their functional properties and aesthetic qualities.	I can with growing confidence, carefully select from a range of tools and equipment, explaining their choices.	I can plan independently by suggesting what to do next; with growing confidence, select from a wide range of tools and equipment, explaining my reason for that choice.	I can plan independently by suggesting what to do next; with growing confidence, select from a wide range of tools and equipment, explaining my reason for that choice.	I can plan independently by suggesting what to do next; with growing confidence, select from a wide range of tools and equipment, explaining my reason for that choice.
safely, appropriately and accurately and learn to follow hygiene procedures;	according to their functional properties and aesthetic qualities and place the main stages of making in a systematic order.	I can select from a range of materials and components according to their functional properties and aesthetic qualities.	I can select from a range of materials and components according to their functional properties and aesthetic qualities.	I can select from a range of materials and components according to their functional properties and aesthetic qualities.
to the nearest gram . I can assemble, join and combine ingredients with some degree of accuracy to create my recipe.	safely, appropriately and accurately and learn to follow hygiene procedures.	I can learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures.	I can learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures.	whether it is the most cost effective and sustainable option.
	including construction materials and kits, textiles and mechanical and electrical components. I can with growing independence, measure and mark out to the nearest cm and millimetre and weigh to the	I can independently take exact measurements and mark out, to within 1 millimetre. I can use a full range of materials and components, including construction materials and kits textiles and	I can independently take exact measurements and mark out, to within 1 millimetre. I can use a full range of materials and components, including construction materials and kits, textiles, and	I can learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures.
	nearest gram. I can cut, shape and score materials with some degree of accuracy. I can assemble, join and combine material and	mechanical components. I can cut a range of materials with precision and accuracy; shape and score materials with precision and accuracy.	mechanical components. I can cut a range of materials with precision and accuracy; shape and score materials with precision and accuracy.	mark out, to within 1 millimetre. I can use a full range of materials and components, including construction materials and kits, textiles, and mechanical components.
	components with some degree of accuracy. I can demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product;	I can assemble, join and combine materials and components with accuracy. I can refine the finish using techniques to improve the	I can assemble, join and combine materials and components with accuracy. I can refine the finish using techniques to improve the	I can cut a range of materials with precision and accuracy; shape and score materials with precision and accuracy.
	I can join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch. I can begin to select and use different and appropriate	appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.	appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.	I can assemble, join and combine materials and components with accuracy. I can refine the finish using techniques to improve the appearance of their product, such as sanding or a
	finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics (Silhouette) .			more precise scissor cut after roughly cutting out a shape.

Evaluate—Substantiative Knowledge				
Year 3	Year 4	Year 5	Year 5 / 6	Year 6
I know how to investigate and analyse a range of existing products.	I know how to investigate and analyse a range of existing products.	I know how to investigate and analyse a range of existing products.	I know how to investigate and analyse a range of existing products.	I know how to investigate and analyse a range of existing products.
I know how evaluate my ideas and products against my own design criteria and consider the views of others to improve my work.	I know how evaluate my ideas and products against my own design criteria and consider the views of others to improve my work.	I know how evaluate my ideas and products against my own design criteria and consider the views of others to improve my work.	I know how evaluate my ideas and products against my own design criteria and consider the views of others to improve my work.	I know how evaluate my ideas and products against my own design criteria and consider the views of others to improve my work.
I can understand how key events and individuals in design and technology have helped shape the world. I can explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose. I can explore what materials/ingredients products are made from. I can consider my design criteria as they make progress and I am willing to alter my plans,. I can evaluate my product against my original design criteria.	I can understand how key events and individuals in design and technology have helped shape the world. I can explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose. I can explore what materials/ingredients products are made from and suggest reasons for this. I can consider my design criteria as they make progress and I am willing to alter my plans. I can evaluate my product against my original design criteria and explain any changes I have made.	I can understand how key events and individuals in design and technology have helped shape the world, I can explain how the changes have impacted our world today. I can consider my design criteria as they make progress and I am willing to alter my plans, sometimes considering the views of others if this helps them to improve their product. I can critically evaluate the quality of design, manufacture and fitness for purpose of products as I design and make. I can evaluate their ideas and products against my original design criteria, making changes as needed and explaining why they are required.	I can understand how key events and individuals in design and technology have helped shape the world, I can explain how the changes have impacted our world today. I can consider my design criteria as they make progress and I am willing to alter my plans, sometimes considering the views of others if this helps them to improve their product. I can complete detailed competitor analysis of other products on the market similar to my own design. I can critically evaluate the quality of design, manufacture and fitness for purpose of products as I design and make. I can evaluate their ideas and products against my original design criteria, making changes as needed and explaining why they are required.	I can understand how key events and individuals in design and technology have helped shape the world, I can explain how the changes have impacted our world today. I can consider my design criteria as they make progress and I am willing to alter my plans, sometimes considering the views of others if this helps them to improve their product. I can complete detailed competitor analysis of other products on the market similar to my own design. I can evaluate their ideas and products against my original design criteria, making changes as needed and explaining why they are required. I can complete detailed competitor analysis of other products on the market. I can critically evaluate the quality of design, manufacture and fitness for purpose of products as I design and make. On completion of the product, I can evaluate a peers work making suggestions to improve their product explaining why the changes will improve the product.

Technical Knowledge—Su	bstantiative knowledge
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Year 3	Year 4	Year 5	Year 5/ 6	Year 6
I know how to apply my understanding of how to strengthen, stiffen and reinforce more complex structures.	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
structures. I can understand that materials have both functional properties and aesthetic qualities. I can apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of the product. I can explain how mechanical systems such as levers and linkages create movement.	structures. I can understand that materials have both functional properties and aesthetic qualities. I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products. I can explain how mechanical systems such as levers and linkages create movement.	structures. I know how to use mechanical systems in my products [for example, gears, pulleys, cams, levers and linkages]. I can understand how to and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. I can apply my understanding of computing to program, monitor and control their products. I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products. I can understand and demonstrate that mechanical and electrical systems have an input, process and output. I can explain how mechanical systems, such as cams, create movement and use mechanical systems in their products. I can apply my understanding of computing to program, monitor and control a product.	structures. I know how to use mechanical systems in my products [for example, gears, pulleys, cams, levers and linkages]. I can understand how to and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. I can apply my understanding of computing to program, monitor and control their products. I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products. I can understand and demonstrate that mechanical and electrical systems have an input, process and output. I can explain how mechanical systems, such as cams, create movement and use mechanical systems in their products. I can apply my understanding of computing to program, monitor and control a product.	structures. I know how to use mechanical systems in my products [for example, gears, pulleys, cams, levers and linkages]. I can understand how to and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. I can apply my understanding of computing to program, monitor and control their products. I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products. I can understand and demonstrate that mechanical and electrical systems have an input, process and output. I can explain how mechanical systems, such as cams, create movement and use mechanical systems in their products. I can apply my understanding of computing to program, monitor and control a product.

Nutrition—Substantiative knowledge				
Year 3	Year 4	Year 5	Year 5/ 6	Year 6
I know and understand what the principles of a healthy and varied diet are.	I know and understand what the principles of a healthy and varied diet are.	I know and understand what the principles of a healthy and varied diet are.	I know and understand what the principles of a healthy and varied diet are.	I know and understand what the principles of a healthy and varied diet are.
I know how a variety of dishes using a range of cooking techniques.	I know how to prepare and cook predominantly savoury dishes using a range of cooking techniques.	I know how to prepare and cook predominantly savoury dishes using a range of cooking techniques.	I know how to prepare and cook predominantly savoury dishes using a range of cooking techniques.	I know how to prepare and cook predominantly savoury dishes using a range of cooking techniques.
I understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. I can start to explain when, where and how food is grown (such as herbs, tomatoes and strawberries) in	I understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. I can start to explain when, where and how food is grown (such as berbs, tomatoes and strawherries) in	They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed and which ingredients are available to them depending on seasonality.	They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed and which ingredients are available to them depending on seasonality and how this might affect my recipe.	They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed and which ingredients are available to them depending on seasonality and how this might affect my recipe.
the UK, Europe and the wider world. I can prepare and cook safely and hygienically. I can with support, use a heat source to cook	the UK, Europe and the wider world. I can prepare and cook safely and hygienically. I can with support, use a heat source to cook	I can explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world.	I can explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world.	I can explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world.
the temperature of the hob and/or oven;	ingredients showing awareness of the need to control the temperature of the hob and/or oven;	I can understand that food is processed into ingredients that can be eaten or used in cooking:	I can understand that food is processed into ingredients that can be eaten or used in cooking;	I can understand that food is processed into ingredients that can be eaten or used in cooking;
I can explain that a healthy diet is made up of a variety and balance of different food and drink, as	I can use a range of techniques such as mashing, whisking, crushing, grating and cutting. I can explain that a healthy diet is made up of a variety and balance of different food and drink, as	I can demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a	I can demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.	I can demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.
represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes. I understand that to be active and healthy, nutritious	represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes;	heat source. I can demonstrate how to use a cooking techniques, such as boiling.	I can demonstrate how to use a range of cooking techniques, such as frying and boiling;	I can demonstrate how to use a range of cooking techniques, such as frying and boiling;
food and drink are needed to provide energy for the body.	food and drink are needed to provide energy for the body;	I can explain that foods contain different substances, such as protein, that are needed for health and be	I can explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and	I can explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and
utensils.	I can prepare ingredients using appropriate cooking utensils.	preparing dishes.	preparing dishes. I can adapt and refine recipes by adding or	preparing dishes. I can adapt and refine recipes by adding or
gram and millilitre. I can start to independently follow a recipe.	I can measure and weigh ingredients to the nearest gram and millilitre.	substituting one or more ingredients to change the appearance, taste, texture and aroma; alter methods,	substituting one or more ingredients to change the appearance, taste, texture and aroma; alter methods, cooking times and/or temperatures.	substituting one or more ingredients to change the appearance, taste, texture and aroma; alter methods, cooking times and/or temperatures.
	i can start to independently follow a recipe;	I can measure accurately.	I can measure accurately and calculate ratios of ingredients to scale up or down from a recipe.	I can measure accurately and calculate ratios of ingredients to scale up or down from a recipe.
		I can independently follow a recipe.	I can independently follow a recipe.	I can independently follow a recipe.

	Lower Key Stage 2		Upper Key Stage 2			
s vo	DME – Design, Make, Evaluate activities		DME – Design, Make, Evaluate activities			
cabul DT pecif	IDEAS— Investigate, Disassembly, Evaluate Activities		IDEAS— Investigate, Disassembly, Evaluate Activities			
ic ic	FTP—Focus Practical Tasks	FTP—Focus Practical Tasks		FTP—Focus Practical Tasks		
	Year 3	Year 4	Year 5 and Year 6 vocabula	Year 5 and Year 6 vocabulary + year 3 and 4 vocabulary		
	Amount	Back stich	saw	Safety ruler Screwdriver		
sut	Baking Sheet	Binca	Vice	Side cutters		
ojec	Chopping Board	Cotton thread	Screws	Snips Spanner		
t	Cleaning cloths	Cross stitch	Nails	Stapler		
<	Grater	Running stitch	Tacs	Dowel		
	Ingredients	Seam allowance	Junior Hacksaw	Battery		
	Knead	Tacking	Motor	Battery Holder		
	Masher	Thimble	Pliers	Light Bulb		
	Measure	Centimetre/metre	G-Clamp	Bulb Holder		
	Measuring jug	Fabric crayons	Goggles	Buzzer Gears		
	Measuring spoons	Fabric pens	Safety glasses	Glass paper		
	Method	Needle Pattern	Hammer	Sand paper		
	Mixing bowl	Pin Ribbon	Hole Punch	Bench		
	Peeler	Tape measure	Compass	Coping saw		
	Recipe	Thread	Pulley	Disassemble		
	Saucepans	Velcro	Switches	Cutting Mat		
	Scales	Running stitch	Wheel	Drill		
	Sieve		Millimetre	Drill bits		
	Weigh		Saw Render	File		
	Wooden spoon		Analyse			
	Grams/Kilogram s		Combine			
	Hygiene		Construct			
	Ladle		Criteria			
	Millilitre/Litre		Evaluate			
	Spatula		Health and safety			
	Temperature					
	Whisk					