Woodside Primary Academy Progression Map

Subject: Design and Technology

Intent: At Woodside Primary Academy, we believe that Design and Technology prepares children to take part in the development of tomorrow's rapidly changing world. Creative thinking encourages the children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and making products and systems.

Autumn	EYFS	Key Stage 1		Key Stage 2			
	Nursery 2-3 Nursery 3-4 Year R Taught across the term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	<u>Nursery 2-3</u> To know where and begin to know how to access building/construction toys in the classroom <u>Nursery 3-4</u> To know what resources can be used to stack as part of the children's investigative small world play. <u>Year R</u> To know how to create a free-standing structure	**Frame Structures – Chair for a soft toy** Understanding how to make freestanding structures stronger, stiffer and more stable. Recognising and describing basic structures and name a range of materials Name some of the tools, techniques and their purpose.	**Wheels and Axle Mechanisms - Wind-powered vehicle** Exploring and using wheels, axles and axle holders. Distinguish between fixed and freely moving axles. Describe the materials, components, techniques and processes they have used, using appropriate vocabulary (for instance, they know the names of the tools/materials they have used)	**Paper Circuits - Paper circuit greetings card** Develop and use knowledge of circuits. Understand, name and describe components and functionality of circuits. Technical vocabulary relating to the subject	**Cooking - Hummus Dip** Knowledge of food hygiene and safe preparation. Knowledge of where different foods come from. Knowledge of seasonality and where and how a variety of ingredients are grown, reared, caught and processed. Knowledge of what elements go into a dish to make a final product that is appealing to a consumer.	**Arch Structures - Building with an arch roof** Knowledge of a range of structures that already exist e.g., tents, bus shelters, umbrellas etc. Knowledge of key events and individuals that relate to study of arch structures Understanding of the materials and resources needed to make an arch structure that can be strengthened and stiffened for an intended purpose. Understanding and knowledge of what an arch structure looks like, how it is structured and how to construct a small-scale frame structure replica of a building with an arch	**Pulleys and Gears: Aerial Tramway (Cable Car)** Understand that mechanical systems and electrical systems have an input process and an output. Understanding of how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project. Knowledge of how pulleys, mechanisms, movement, gears, levers, pivot, motors operate.

						roof.	
Skills	<u>Nursery 2-3</u> Building independently with a range of appropriate resources <u>Nursery 3-4</u> Making imaginative and complex small worlds with blocks and construction kits, such as a city with different buildings and a park. <u>Year R</u> Extended, repeated and regular practising of physical i.e., stacking, constructing, pushing and pulling.	Demonstrate measuring, marking it, cutting, shaping, joining and finishing techniques with a range of tools. Build a variety of freestanding structures using construction kits such as: wooden blocks, interconnecting plastic bricks. Fold paper or card in different ways to make freestanding structures, using masking tape to make joins.	With support, using construction kits, create products that move. With support, demonstrate how wheels and axles may be assembled as either fixed axles or free axles . Stating what products, they are designing and making and why and understanding whether their product is for a user or themselves. Marking out, cutting, joining materials and components. Use a sample of materials and components to design and make – generating some of their own ideas by drawing on their own experiences. Develop and communicate ideas by talking and drawing.	Begin to put together a step-by-step plan which shows the order, equipment and tools they need to make the product. Identify appropriate tools and skills needed to work with accuracy. Measure, mark out, cut, score, shape and assemble products with some accuracy. Explain the choices of materials according to functional properties and aesthetic qualities.	Demonstrate a range of cooking techniques such as peeling, chopping, slicing, grating, mixing and spreading. Prepare a dish safely and hygienically. Adapt recipes to change the appearance and taste to suit the consumer's needs.	Use paper cups to build 3D frameworks. Compare the strength of different frameworks. Accurate use of tools and equipment. Demonstrate skills and techniques for accurately joining framework materials together e.g., paper straws, square sectioned wood. Develop a detailed, step-by-step plan listing tools and materials. Use sketches to annotate with notes to develop and communicate ideas. Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development and	Make a circuit that powers a motor Know how to create a sturdy structure. Produce a detailed step by step plan. Explain how a product will appeal to a specific audience. Design & measure the safe use of tools Create a cable car using pulley wheels which change speed and direction of rotation.

						carrying out appropriate tests.	
Vocabulary	<u>Nursery 2-3</u> Lego, build, brick, tall, big, small, little, wide <u>Nursery 3-4</u> castle, house, tool, large, small, build, construct <u>Year R</u> pushing, pulling, constructing, tall, large, small, object, block	Structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, edge, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder **inspiration, purpose, user, shell, frame, solid, combined, rigid, properties, construct, beam, column, slab, stable, cardboard, glue, seat, frame, sketch, measuring, cutting, joining, prototype.**	Wheels, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, design, make, evaluate, purpose, user, criteria, functional **inspiration, purpose, user, rotating, force, surface, strength, stability, dowel, measure, cut, estimate, assemble.**	Joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, decision, evaluating, design brief, design criteria, innovative, prototype **inspiration, purpose, user, electricity, circuit, electronic, LED, conductive, cell, copper tape, automatically, fluency, enhance, visible, invisible, measure, cut, estimate, assemble.**	Ingredients, chopping board, healthy eating, hygienic, recipe, peel, combine, blend, sweet, tangy, sour, measure, measuring jug, measuring spoons, mixing bowl, mix, flavour, taste, **inspiration, purpose, user**, **technique, weighing, stirring, measuring, juicing, blending, crushing, grating, vitamins, carbohydrates, protein, fibre, fat, safety, storage, use by date, seasonal food, nutrition.**	Structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional **Inspiration, automatically, fluency, arch structures, parabola, ellipse, perfected, timber, concrete, corrugated, acetate.**	Pulleys, mechanisms, movement, gears, levers, pivot, motors **inspiration, purpose, user, circumference, mechanical gear train, interlock, mitre gear, block and tackle pulley, simple pulley**

Spring	EYFS	Key Stage 1		Key Stage 2			
	Nursery 2-3 Nursery 3-4 Year R Taught across the term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge	<u>Nursery 2-3</u> For children to know how to explore manipulating and playing with different materials for a desired effect i.e., doing a zip for a coat. <u>Nursery 3-4</u> To know how to join different materials together. <u>Year R</u> To know what tools are and how to use them for a desired effect.	**Slider Mechanisms – Greetings card with a slider mechanism AND Lever Mechanisms - Litter grabber** Children will understand how to make a product move and understand how mechanisms work within products. Understand that different mechanisms produce different types of movement.	**Cooking -A quick, nutritious and inexpensive meal (couscous salad)** Knowledge of familiar food groups e.g., fruits and vegetables. Understand the use of different utensils and their function. Understand the characteristics of a range of fruit and vegetables to create a chosen product, understanding which ingredients work well together and how the end product can look aesthetically pleasing to the user.	**Shell Structures - Cardboard chair** Develop knowledge of 3D shapes. Knowledge of how to strengthen, stiffen and reinforce existing materials and what tools to use to do so. Knowledge of how to securely join materials together.	**App Control -Lifestyle helper** Knowledge of what apps are. Develop understanding of internal and external apps and their features. Understand the characteristics of a range of different devices and their function. Demonstrate an understanding of how designers take inspiration from existing products to design a first prototype. Develop understanding of coding apps and their features.	**Cooking – Bread Rolls** Knowledge of the availability of locally sourced/seasonal/ organic ingredients. Knowledge of how bread is made and how the ingredients are sourced/milled. Understanding of the nutritional value of a product and the ingredients that are needed to make a particular product. Knowledge of ingredients that could be added to basic recipes for an added source of flavour e.g., herbs, spices, vegetables or cheese	**Textiles (Fabric Joining) T-shirt with embroidered letters** Understanding of basic stitching and moving onto knowledge of more advanced stitching techniques drawing upon previous knowledge. Knowledge of how existing products have been constructed. Developing knowledge of what embroidering is and, after looking at examples, understanding what design choices have been made, relating to the target audience and functionality of the product. Knowledge of different patterns and understanding the process in creating a pattern on a piece of fabric and what the aesthetical benefit is. .

Skills	<u>Nursery 2-3</u> Using large and small motor skills to do things independently, e.g., managing buttons and zips and pouring drinks Exploring different materials, using all their senses to investigate them. Manipulating and playing with different materials <u>Nursery 3-4</u> Beginning to: Stack, connect, stick, shape <u>Year R</u> To begin to use tools for a purpose i.e., cutting, sticking, folding.	Selecting and using tools to cut, shape and join paper and card. Use simple finishing techniques suitable for the product they are creating.	Group familiar food groups. Preparing, cutting, peeling, grating ingredients hygienically. Measure ingredients using scales. Assemble ingredients. Follow a recipe.	Evaluate existing products. Learn a range of techniques and practice finger fluency. Design their own cardboard chair – selecting appropriate materials and ways to construct suited to its purpose and planning the main stages of making. Evaluate product, testing their product against the original design criteria, taking other views into account.	Evaluate existing products using prior knowledge. Develop a simple design specification to guide their thinking. Produce a detailed list of tools, equipment and materials needed and formulate step-by-step plans. Develop coding skills using Lego Education Spike to create a lifestyle helper using coding elements. Make high quality products to ensure a well finished final product that matches the intended user and purpose. Evaluate the final product in use and compare it to the original design specification. Improve the final product with reference to the design specification.	Measuring out, cutting, shaping, combining, kneading, beating, rubbing and mixing ingredients. Know how to appropriately use utensils and equipment safely and hygienically. Writing a step-by-step recipe, including a list of ingredients, equipment and utensils needed. Make and present the food product appropriately for the intended user and purpose. Evaluate final product with reference back to design specification Identifying improvements and taking the views of others and prior knowledge into account.	Building upon previous basic stitching techniques, using more advanced stitching such as cross stitch, satin stitch. Analyse and investigate a range of existing products which have been produced by combining fabric shapes. Disassemble a product and evaluate what the fabric shapes look like and how the parts have been joined, how the product has been strengthened and what fastenings have been used and why. Understanding the insulating properties of the product, the water resistance, wear and strength of the textiles. Develop skills of threading needles and joining textiles. Develop the skill of sewing textiles by joining the right side together and making seams Know how to attach wadding or stiffening and how to start and finish off a row of stitches.

							Pinning a pattern on to fabric. Leaving seam allowances and using different cutting techniques. Evaluating and improving a product based on its functionality and visual appeal.
Vocabulary	<u>Nursery 2-3</u> Button, zip, coat, up, down, eyes, ears, nose, mouth, taste, smell, see, feel <u>Nursery 3-4</u> connect, stick, shape, stack, build <u>Year R</u> Cutting, sticking, folding, gluing, half	Slider, lever, pivot, slot, bridge/guide Card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards, design, make, evaluate, user, purpose, ideas, design criteria, product function, **inspiration, purpose, user, rod, gear, guide bridge, rotating, horizontal, vertical, diagonal, transparent, opaque, rigid, force, input, output, split pin**	Chopping board, knives, grate, ingredients, healthy eating, hygienic, recipe, peel, combine, blend, sweet, tangy, sour, **inspiration, purpose, user, nutritious, safety, design features, technique, utensils, blind test, tasting, diagram, seasonal, evaluation.**	**Shell structure, variety, purpose, external, natural and manufactured, inspiration, purpose, user, automatically, fluency, functional object, corrugated cardboard, cut, measure, estimate, assemble, join, modify.**	**app control, device, internal, external, app-enabled, Bluetooth, Wi-Fi, programming, coding, instruction, scratch, control, response, feature, design diagram, inspiration, purpose, user.**	Ingredients, yeast, dough, bran, flour, whole meal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrates, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, **inspiration, purpose, user.**	Joining, finishing, fabric, template, pattern pieces, mark out, join, decorate, finish, features, suitable, mock-up, stitch, structure, horizontal, vertical, strength, evaluate, improve, **inspiration, purpose, user, material, features, running stitch, back stitch, design, label, improve.**

Summer	EYFS	Key Stage 1		Key Stage 2			
	Nursery 2-3 Nursery 3-4 Year R Taught across the term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Knowledge	<u>Nursery 2-3</u> To know how to use their fine motor skills to explore stacking a variety of different construction materials. <u>Nursery 3-4</u> Develop and build upon knowledge of how to join different materials together <u>Year R</u> To build on existing knowledge to use tools accurately and independently.	**Cooking – Portable Snack** Understanding what consists of a healthy balanced diet and using the principles of a healthy and varied diet to prepare a smoothie. Exploring the names, tastes and appearances of different fruits and vegetables. Understand where fruits and vegetables come from and how they are grown. Understand the characteristics of a range of fruit and vegetables to create a chosen product, understanding which ingredients work well together and how the end product can look aesthetically pleasing to the user.	**Textiles - Animal Hand Puppet** Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using a range of techniques e.g., running stitch, glue, over stitch & stapling. Describe the materials, processes, components and techniques they have used in order to make their product, using appropriate vocabulary.	**Cooking: Vegetable Soup** Knowledge and understanding about healthy eating and the eating well plate. Understand and apply the principles of a varied, healthy diet Knowledge of ingredients that could be added to basic recipes for an added source of flavour e.g., herbs, spices, vegetables or cheese Understanding of the nutritional value of a product and the ingredients that are needed to make a particular product.	**Linked Levers - Fold-away Safety Barrier** **AND** **Pneumatics - Pneumatic Lifting Device** Children will understand how to make a product move and understand how mechanisms work within products. Understand that different mechanisms produce different types of movement. Selecting and using tools to cut, shape and join paper and card. Use simple finishing techniques suitable for the product they are creating. Knowledge of a range of pneumatic mechanisms. Knowledge of the uses and purposes of a pneumatic system/mechanism. Knowledge of how tools they are working with should be used effectively and with safety. Knowledge of what a mechanical system is and what products exist that incorporate pneumatics.	**Mechanical systems – CAMS – Automaton Toy** Understanding of the different types of movement: rotary, oscillating and reciprocating. Understanding that mechanical systems have an input, process and an output. Understand how CAMS can be used to produce different types of movement and change the direction of movement. Understand, know and use technical vocabulary relevant to the project Understand what tools are required for a specific purpose and how they are used to make a cam mechanism.	**Cooking: Make a meal for £10 (A Meal for a Hero)** Measuring out, cutting, shaping, combining, kneading, beating, rubbing and mixing ingredients. Know how to appropriately use utensils and equipment safely and hygienically. Knowledge and understanding about healthy eating and the eating well plate. Understanding of the nutritional value of a product and the ingredients that are needed to make a particular product. Writing a step-by-step recipe, including a list of ingredients, equipment and utensils needed. Make and present the food product appropriately for the intended user and purpose. Evaluate final product with reference back to design specification Identifying improvements and taking the views of others and prior knowledge into account.

Skills	<u>Nursery 2-3</u> Using their imagination as they consider what they can do with different materials. These can then be stacked. <u>Nursery 3-4</u> Developing the skill of: Stack, connect, stick, shape <u>Year R</u> To count to develop using tools for a purpose i.e., cutting, sticking, folding.	Following procedures for safety and hygiene. With support, learning how to cut food safely. With support, using a range of cooking techniques: Tasting, evaluating, grating, dicing, slicing. Describing the ingredients used and design and plan based on healthy choices.	Stating what products, they are designing and making and why. Identifying whether their products are for themselves or other users. Using prepared teacher aids to demonstrate the correct use of appropriate tools to mark out, tape or pin the fabric to the templates or paper patterns. With support, demonstrating examples of joining techniques to practise e.g., running stitch including threading own needle, stapling, lacing and gluing. Using prepared teacher aids, demonstrating examples of finishing techniques e.g., sewing buttons, 3D fabric paint, gluing sequins, printing	Prepare and cook a soup safely and hygienically including, if appropriate, the use of heat sources (oven, hob) Using a range of techniques such as: peeling, chopping, slicing, grating, mixing, spreading or kneading. Follow a recipe.	Selecting and using tools to cut, shape and join paper and card. Use simple finishing techniques suitable for the product they are creating. Investigating and analysing familiar objects that use air to make them work in order to construct a simple pneumatic system. Demonstrating a range of pneumatic mechanisms using prepared teaching aids including syringes joined by plastic tubing. Demonstrate how to assemble the systems including the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques. Develop a design brief and consider the main stages in making before assembling high quality products Evaluating and improving a product.	Carry out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking. Produce a detailed list of tools, equipment and materials needed and formulate step-by-step plans. Develop measuring, marking, cutting, shaping and joining skills to make cam mechanisms. Demonstrate the accurate and safe use of tools and equipment. Make high quality products and use a range of decorative finishing techniques to ensure a well finished final product that matches the intended user and purpose. Evaluate the final product in use and compare it to the original design specification. Improve the product using prior knowledge.	Prepare and cook a meal safely and hygienically including, if appropriate, the use of heat sources (oven, hob) Using a range of techniques such as: peeling, chopping, slicing, grating, mixing, spreading or kneading. Follow a recipe.

Vocabulary	<u>Nursery 2-3</u> Fold, rip, soft, cloth <u>Nursery 3-4</u> Stack, connect, stick, shape <u>Year R</u> cutting, sticking, folding.	Juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy, diet, ingredients, tasting, popular, design, blend, fruit, vegetable **inspiration, purpose, user, ingredient, technique, utensils, design process, peeler, grater, spread, bridge/claw hold, weigh, stir, snip.**	Joining, finishing, fabric, template, pattern pieces, mark out, join, decorate, finish, features, suitable, mock-up, stitch, structure, horizontal, vertical, 3 dimensions, strength, evaluate, **inspiration, purpose, user, marionette, material, features, running stitch, back stitch, design, label, improve.**	Utensils, ingredients, taste, sweet, sour, hot, spicy, preference, greasy, moist, cook, savoury, hygienic, edible, grown, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, **inspiration, purpose, blend, crush, safety, preparation, chunky, smooth, varied diet, evaluate, modify, improve.**	Components, fixing, attaching, tubing, syringe, plunger, split, pin, paper fastener, pneumatic system, input, movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight, linear, rotary, oscillating, reciprocating, user, purpose, function **inspiration, purpose, user, evaluate, improve**	Cam, snail cam, off-centre, peg cam, pear shaped cam, follower, axle, shaft, crank, handle, housing, framework, rotation, rotary motion, oscillating motion, reciprocating motion, annotated sketches, exploded diagrams, mechanical system, input, process, output, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief, **inspiration, purpose, user, evaluate, modify, improve.**	**inspiration, purpose, blend, crush, safety, preparation, chunky, smooth, varied diet, evaluate, modify, improve.**

Impact (End Points)						
EYFS	**Key Stage 1**		**Key Stage 2**			
Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Children will be able to safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children will share their creations, explaining the process they have used. Children will use a range of small tools, including scissors, paint brushes and cutlery.	Children should be confident using a range of different tools competently and safely. They should be able to design their ideas and think about the materials used before making them, demonstrating a range of cutting, shaping and joining techniques. Children should be confident in cutting, peeling and grating ingredients safely and hygienically and understand simple utensils used to do so. They should be able to select from a range of fruits and vegetables according to their characteristics and understand what fruits and vegetables work well together to create a final product.	Children will be able to make simple plans and design according to a criteria. They will be able to describe the materials they have used in order to make an end product and evaluate it based on their design criteria. Children will have understood and explored a range of stitching techniques and finishing techniques and practised using these with teacher support and should be confident in using these techniques.	Children should be confident in constructing and designing products using the appropriate tools. Children should be confident assembling their product based on their existing knowledge, skills and understanding, thinking about the aesthetics of their finished item.	Children should be confident using levers and linkage mechanisms to develop a product. They should be able to develop their knowledge and skills and replicate teaching aids that have been modelled to them against a design criteria. They should be able to evaluate their product against their design criteria, focusing on functionality and appeal to a target audience. Children will develop understanding of coding apps and their features. Children should understand the principles of a varied diet and the benefits of healthy eating. They will understand how foods are grown and sourced and what elements are needed within a dish to create a finished product and how recipes can be adapted to suit the needs of the consumer. Children should begin to build confidence in using a simple pneumatic system and creating one themselves using teacher aids. They should develop skills and	Children should be able to use experiences of a range of techniques previously learnt to construct a small-scale frame structure. They should be confident in knowing how to strengthen and stiffen a product. Children should develop their knowledge and understanding about hygiene, nutrition and healthy eating. They should be confident in using kitchen appliances and in choosing the appropriate appliances to make their chosen food. They should be confident in following a recipe and measuring ingredients appropriately. Children should be able to apply knowledge of axles and axle holders and wheels to create a space toy using cams. They will understand the basics of cams, what they are and how they function and with teacher aid, they will create a prototype and a design brief which they should be confident in following in order to create the automaton toy.	Children will draw upon previous taught knowledge and be confident in using a variety of sewing techniques, focusing on consistency and experimenting with more advanced techniques. They should be confident in analysing a product based on its functionality and understanding the difference between a functional product and a product that is visually appealing. They should be able to use these skills to create a design brief and a prototype to then replicate into a product intended for a specific user. Children will understand the fundamentals of how ingredients are sourced and made and what constitutes the process of making bread. They should be confident in using kitchen appliances and equipment and with their experience of following a recipe, should be confident in creating their own recipe, focusing on knowledge of bread and its qualities in terms of adding extra ingredients to it. Children will use their experiences of axles, axle holders and wheels along with their basic understanding of electrical circuits to build a working circuit, showing confidence in the tools and symbols they use to do so. They should be able to produce a plan and a list of tools and

				create a design brief to assemble a pneumatic product and evaluate it based on the design brief.		equipment they need to create their own aerial tramway using skills and knowledge taught.