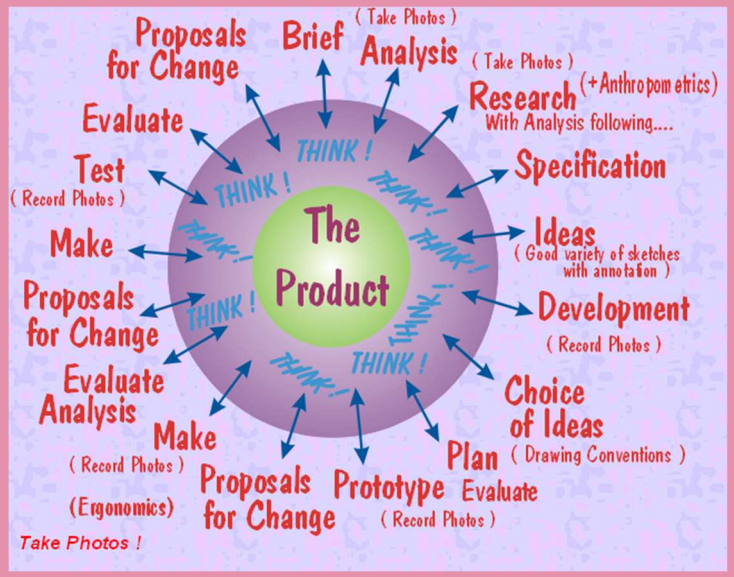
Curriculum Skills and Progression Map
Design Technology



Nebula
where stars are born

The Nebula Federation

White Woman Lane Junior School

Design and Technology is a valuable subject both theoretical and practical. It gives the children the opportunity to develop their skills, knowledge and understanding in design, structures and mechanisms and use a range of materials, including food. The curriculum at White Woman Lane aims to inspire and develop a love of Design and Technology and to encourage pupils to develop their skills with imagination, creativity and courage. It teaches the children to experiment with their designs and create items that can be used in the real world. Design and Technology enables children to draw on their maths, science, computing and art skills. White Woman Lane's key values of Wisdom, Courage, Vision, Hope and Kindness are present within our DT curriculum: The wisdom to know what materials and knowledge can help them achieve their goals; the courage and vision to imagine and explore new ideas; the hope that a design can be created regardless of any challenges; and always, throughout, a kindness to themselves and others.

DESIGN TECHNOLOGY: AGE RELATED STATUTORY COVERAGE
KEY STAGE ONE LEARNING
Design • Design purposeful, functional, appealing products based on design criteria • Generate, develop, model and communicate their ideas through talking, • drawing, templates, mock-ups and ICT **Make** • Select from and use a range of tools and equipment to perform practical tasks • Select from and use a wide range of materials and components, including • construction materials, textiles, ingredients **Evaluate** • Explore and evaluate a range of existing products • Evaluate ideas / products against design criteria **Technical knowledge** • Build structures, exploring how they can be made stronger, stiffer and more stable • Explore and use mechanisms in their products. • Use the basic principles of a healthy and varied diet to prepare dishes Understand where food comes from.

DESIGN TECHNOLOGY: AGE RELATED STATUTORY COVERAGE
KEY STAGE TWO LEARNING
Design • Use research and develop criteria to inform the design of innovative, functional, appealing products that are fit for purpose • Generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design **Make** • Select from and use a wider range of tools and equipment to perform practical tasks accurately • Select from and use a wider range of materials and components **Evaluate** • Investigate and analyse a range of existing products • Evaluate ideas and products against own design criteria and consider the views of others • Understand how key events and individuals have helped shape the world **Technical knowledge** • Apply their understanding of how to strengthen, stiffen and reinforce more complex structures • Understand and use mechanical systems in their products • Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • Apply understanding of computing to program, monitor and control products. • 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.

Skills Map – Design Technology		
Year 3 – Design Technology		
Developing, Planning and Communicating Ideas	**Working with tools, equipment, materials and components to make quality products**	**Evaluating processes and products**
• Can they plan their design, using accurate diagrams and labels? • Can they plan the equipment/ tools needed and give reasons why? • Can they start to order the main stages of making their product? • Can they identify a design criteria and establish a purpose/ audience for their product? • How realistic are their plans? e.g. tools, equipment, materials, components? **DESIGN AND DEVELOP** • Use others to help generate their ideas • Use what they know about the properties of materials • Plan their work to include a range of joins	• Can they use equipment and tools accurately and safely? • Can they select the most appropriate materials, tools and techniques to use? • Can they manipulate materials using a range of tools and equipment? • Can they measure, cut and assemble with increasing accuracy? **MAKING** • Measure and cut out using centimetres and weigh in grams • Choose tools and equipment which are appropriate for the job • Prepare for work by assembling components together before joining	• Start to think about their ideas as they make progress and be willing to make changes if this helps them to improve their work? • Can they assess how well their product works in relation to the purpose? • Can they explain how they could change their design to make it better? **PRODUCT AND EVALUATION** • Be clear about their ideas when asked • Can alter and adapt original plans following discussion and evaluation

• Ensure that plans are realistic and appropriate for the aim • Show the order of working in plans • Use models, pictures and words in designs • Make increasing use of ICT to plan ideas • Recognise that designs must meet a range of needs • Say why something will be useful • Apply what they know about mechanisms to create movement when planning and designing • Investigate a range of products to see how they work	• Use scoring and folding for precision • Make holes using a punch and drill • Work out how to make models stronger • Alter and adapt materials to make them stronger • Combine a number of components together in different ways • Make the finished product neat and tidy • Begin to select their own ingredients when cooking or baking • Make good presentation of food	• Recognise what has gone well, but suggest further improvements for the finished article • Suggest which elements they would do better in the future • Identify where evaluation has led to improvements • Understand safe food storage
Year 3		
Textiles • Can they join textiles of different types in a range of ways? • Can they choose textiles both for their appearance and also qualities? • Can they begin to use a range of simple stitches? **Unit: Picture Frame**	**Mechanisms** • Can they make a product which uses mechanical components? • Can they use a range of components? e.g. levers, linkages and pneumatic systems **Unit: Pop Up Books**	**Construction** • Can they join materials effectively to build a product? • Can they use a range of techniques to shape and mould materials? • Can they use finishing techniques? e.g. sanding, varnishing, glazing etc. **Unit: Pop Up Books** **Unit: Picture Frames**

Autumn	**Spring**	**Summer**
PROJECT: **Pop Up Books**	**PROJECT:** **Design and make a picture Frame**	**PROJECT:** **Pizzas**
Vocabulary		
Book, lever, slider, pop up, flap, glue, fold, linkage, mechanisms, techniques, graphic, plan, design, split pins,	measuring, choice, decoration, quality, component parts, purpose planning, order, layering, cutting, finish, board, evaluate, stable, free-standing, frame, sturdy, reinforce, near, close, wide, narrow, deep, shallow, thick, thin, sawing	Measuring, recipe, ingredients, tomato, cheese, fresh, grated, construct, grill, temperature
Cross Curricular Links	**Cross Curricular Links**	**Cross Curricular Links**
Literacy: writing Numeracy: measuring, statistics Science: materials and their properties Art: decorative features, aesthetics	Literacy: writing Numeracy: measuring, statistics Art: decorative features, aesthetics	Literacy: reading, writing Numeracy: measuring, statistics Science: Nutrition/ Food Computing: planning and research Art: decorative features, aesthetics

Skills Map – Design Technology		
Year 4 – Design Technology		
Developing, Planning and Communicating Ideas	**Working with tools, equipment, materials and components to make quality products**	**Evaluating processes and products**
• Can they create a final design for their product based on initial ideas and revisions, based on existing ideas? • Can they create a detailed plan considering their target audience, design criteria and intended purpose? **DESIGN AND DEVELOP** • Collect and use information to generate ideas • Consider the way the product will be used • Understand designs must meet a range of criteria and constraints • Take users' views into account	• Can they use equipment and tools with increased accuracy and safety? • Can they select the most effective materials, tools and techniques to use? • Can they manipulate materials effectively using a range of tools and equipment? • Can they measure, cut and assemble accurately? **MAKING** • Increasingly model their ideas before making • Measure accurately to centimetres and grams • Combine materials for strength and to improve how the product looks • Use permanent and temporary fastenings to join	• Can they think about their ideas as they progress and make changes to improve their work? • Can they assess how well their product works in relation to the design criteria and the intended purpose? • Can they explain how they could improve their design and how their improvement would affect the original outcome? **PRODUCT AND EVALUATION** • Talk about what they like and dislike, giving reasons • Develop their designs through their own reflection and the evaluation of others • Carry out tests before making improvements

• Understand how some properties can be used – e.g. waterproof • Think ahead about the order of their work • Add electricity to create motion or make light • Produce step by step plans • Make ongoing sketches and annotations • Collect and use information to generate ideas • Consider the way the product will be used • Understand designs must meet a range of criteria and constraints • Take users' views into account • Understand how some properties can be used – e.g. waterproof • Think ahead about the order of their work • Add electricity to create motion or make light • Produce step by step plans • Make ongoing sketches and annotations	• Join with a greater range of techniques – e.g. staples • Strengthen joins and corners in a variety of ways • Understand how wheels, axles, turning mechanisms, hinges and levers all work together	• Evaluate food by taste, texture, flavour etc.
Year 4		
Textiles	**Electrical and Mechanical Components**	**Construction**

• Can they consider which materials are fit for purpose and join them appropriately? • Can they devise a template or pattern for their product? • Can they choose textiles both for their appearance and also qualities? • Can they begin to use a range of simple stitches? **Unit: Stockings**	• Can they use a simple circuit and add components to it? • Can they make a product which uses both electrical and mechanical components? **Unit: Light Up Signs**	• Can they measure accurately to build effective structures? • Can they use a range of techniques to shape and mould? **Unit: Cereal Bars** • Can they experiment with a range of techniques to increase stability in a structure? • Can they use finishing techniques, showing an awareness of audience? • e.g. sanding, varnishing, glazing etc. **Unit: Light Up Signs** **Unit: Stockings**
Autumn	**Spring**	**Summer**
PROJECT: **Stockings**	**PROJECT:** **Light Up Signs**	**PROJECT:** **Cereal bars and packaging**
Vocabulary		
Sew, Stitch, fabric, join, fix, ribbon, thread, string, needle, weave, plan, evaluate, running stitch,	**circuit, components, buzzer, wires, batteries, open, shut, on, off, safety, electricity**	**Cereal, farm, produce, make, recipe, oats, honey, bind, butter, ingredients, cook, refrigerate, packaging, healthy, divide, seeds, vegetarian, vegetables**
Cross Curricular Links	**Cross Curricular Links**	**Cross Curricular Links**
Literacy: writing **Numeracy: measuring, statistics,** **Computing: planning and research** **Art: decorative features, aesthetics**	**Literacy: writing** **Numeracy: measuring, statistics** **Science: electricity** **Computing: planning and research**	**Literacy: reading, writing** **Numeracy: measuring, statistics, weighing** **Science: Eating and Digestion**

	Art: decorative features, aesthetics	Computing: planning and research Art: decorative features, aesthetics

Skills Map – Design Technology		
Year 5 – Design Technology		
Developing, Planning and Communicating Ideas	**Working with tools, equipment, materials and components to make quality products**	**Evaluating processes and products**
• Can they survey their target audience and use this to generate ideas? • Can they take a user's view into account when designing? • Can they produce a detailed step-by-step plan for their design method? • Can they suggest some alternative designs and compare the benefits and drawbacks to inform the design process and outcome? **DESIGN AND DEVELOP**	• Can they choose appropriate tools and materials to ensure that the final product will appeal to the audience? • Can they use a range of tools and equipment with good accuracy and effectiveness, within established safety parameters? **MAKING** • Carry out tests to see if their design works	• Can they continuously check that their design is effective and fit for purpose? • Can they assess how well their product works in relation to the design criteria and the intended purpose and suggest improvements? • Can they evaluate appearance and function against the original design criteria? **PRODUCT AND EVALUATION** • Identify what is working well and what might be improved – and make choices from several alternatives

• Make more complex designs to include belts and pulleys, and a combination of other mechanisms • Plan the order of work by thinking ahead • Use sketches to show other ways of doing things – and then make choices • Meet an identified need – e.g. a meal for an older person – by selecting ingredients or materials • Use various sources of information and draw on them in design	• Make improvements from design suggestions • Work in a safe and hygienic way • Measure and cut precisely to millimetres • Make stable and strong joins to stand the test of time • Use proportions when cooking, by doubling and halving recipes	• Refine the quality of the finished product, including making annotations on the design • Clarify ideas through drawing and modelling • Increasingly use testing to improve models and finished products
Year 5		
Textiles • Can they consider the audience when choosing textiles? • Can they make up a prototype first? • Can they use a range of joining techniques? • Can they devise a template or pattern for their product? **Unit: Fabric Gardens**	**Mechanical Components** • Can they refine their product after testing it? **Unit: Ceramic Design** • Can they incorporate hydraulics and pneumatics?	**Construction** • Are their measurements accurate enough to ensure precision? • Can they demonstrate that their product is strong and fit for purpose? • Are they motivated to refine and further improve their product? **Unit: Fabric Gardens** **Unit: Ceramic Design**

Autumn	Spring	Summer
PROJECT: **Ceramic design- containers**	**PROJECT:** **Fabric Gardens** **(combined with Art)**	**PROJECT:** **Bread**
Vocabulary		
Design, make, craft, plan, design, evaluate, clay, pottery, tools, kiln, dry, moist, air dry, pinching, slab, kneading	Sew, stitch, fabric, fix, join, ribbon, thread, string, needle, weave, plan, evaluate, design	Cereal, farm, produce, make, recipe, bread, bread types, wheat, honey, butter, flour, yeast, ingredients, rise, seeds, kneading
Cross Curricular Links	**Cross Curricular Links**	**Cross Curricular Links**
Numeracy: measuring Science: working scientifically: planning and prep, properties and change of materials Computing: planning and research Art: decorative features, aesthetics	Literacy: writing Numeracy: measuring Computing: planning and research Art: decorative features, aesthetics	Literacy: writing Numeracy: measuring, statistics Science: properties and change of materials Art: decorative features, aesthetics

Skills Map – Design Technology		
Year 6 – Design Technology		
Developing, Planning and Communicating Ideas	**Working with tools, equipment, materials and components to make quality products**	**Evaluating processes and products**
• Can they use a range of information to inform their design? • Can they use market research to inform plans? • Can they work within constraints? • Can they justify their plan to someone else? • Can they consider culture and society in their designs? • Have they considered the use of the product when selecting materials? • Have they thought about how their product could be marketed through packaging and advertising? **DESIGN AND DEVELOP** • Keep cost constraints in mind when selecting materials in design • Use their knowledge of –e.g.- science and art when designing	• Can they choose appropriate tools and materials to ensure that the final product will appeal to the audience? • Can they use a range of tools and equipment with good accuracy and effectiveness, within established safety parameters? **MAKING** • Measure and cut out in precise detail, and make sure that finished products are carefully finished	• How well do they test and evaluate their final product? • Is it fit for purpose? • What would improve it? • Would different resources have improved their product? • Would they need more or different information to make it even better? • Does their product meet all design criteria? **PRODUCT AND EVALUATION** • Research products using the internet • Test and evaluate commercial products, understanding how this

• Be aware of commercial aspects and incorporate these into their designs • Design including hydraulics and pneumatics when where appropriate • Draw scaled diagrams with increasing use of ratio Calculate the amount of materials needed use this to estimate cost	• Make separate elements of a model before combining into the finished article • Understand how an article might be mass produced • Produce a simple instruction manual or handbook for their product	information supports their own designs • Evaluate a range of different sources of information such as advertising and handbooks
Year 6		
Textiles • Can they consider the audience when choosing textiles? • Can they make up a prototype first? • Can they use a range of joining techniques? **Unit: Bridges** **Unit: Shelters**	**Electrical and Mechanical Components** • Can they use different kinds of circuits in their product to improve it? • Can they incorporate a switch into their product? • Can they refine their product after testing it? • Can they incorporate hydraulics and pneumatics? **Unit: Moving Vehicles**	**Construction** • Are their measurements accurate enough to ensure precision? • Can they demonstrate that their product is strong and fit for purpose? • Are they motivated to refine and further improve their product? **Unit: Bridges** **Unit: Shelters** **Unit: Moving Vehicles**
Autumn	**Spring**	**Summer**
PROJECT: **Pizza** **Bridges**	**PROJECT:** **Moving Vehicles** **(science link)** **STEM -**	**PROJECT:** **Shelters (also linked to textiles)**

	OZBOTS / LEGO kits- control **LTa kits - wheelbarrows**	
Vocabulary		
Structure, trusses, design, manipulate, pillars, beams, sturdy, span gaps, steel, concrete, construction, girders, investigate, explore, compression, lattice truss, warren truss, Pratt truss, abutments, distributes weight.	Lego, construction, kit, instructions, test, fault,	Shelter, structure, shape, design, efficient, weak, strong, evaluate, triangle
Cross Curricular Links	**Cross Curricular Links**	**Cross Curricular Links**
Numeracy: measuring Science: materials	Literacy: writing Numeracy: measuring, statistics Science: materials and their properties Computing: planning and research Art: decorative features, aesthetics	Literacy: writing Numeracy: measuring, statistics, weighing Science: properties and change of materials, forces Art: decorative features, aesthetics

Design Technology Word Mat

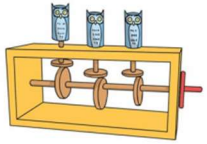
function

mechanism

design

equipment

join



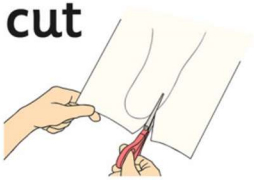
draw

cut

practical

template

tool



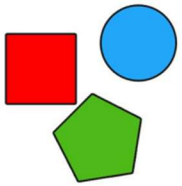
mock-up

develop

shape

material

computer



finish

textile

build

cooking

evaluate

ingredient

model

make

recipe

construct

structure

product

twinkl www.twinkl.co.uk

Nebula
where stars are born