2019

Curriculum Skills and Progression Map
Design Technology

Nebula
where stars are born

The Nebula Federation

White Woman Lane School

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?	• 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?	• 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?
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 • 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	**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 • 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	**PRODUCT AND EVALUATION** • Be clear about their ideas when asked • Can alter and adapt original plans following discussion and evaluation • 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

• Apply what they know about mechanisms to create movement when planning and designing • Investigate a range of products to see how they work	• Begin to select their own ingredients when cooking or baking • Make good presentation of food	
Year 3 – Choose from: Areas of Study		
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?	**Mechanisms** • Can they make a product which uses mechanical components? • Can they use a range of components? e.g. levers, linkages and pneumatic systems	**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.
Key Content **PROJECTS – Design and make a folder/wallet**	**Key Content** **PROJECTS – Moving Monsters** **STEM –** **Compass/Escape/Trap/Trapped –** **MTa STEM KITS**	**Key Content** **PROJECTS – Design and make a photo frame** **STEM –** **Compass/Escape/Trap/Trapped –** **MTa STEM KITS**
Vocabulary Sew, stitch, fabric, fix, join, ribbon, thread string, needle, weave, plan, evaluate	Air, pneumatic systems, joining, fixing components, materials, construct, control, movement, plan , evaluate, scissors, mark up, improve	User, choice, decoration, quality, component parts, purpose, bench hook, saw, glue, glue gun planning, order, rolling, layering, cutting, finish, board, evaluate stable, free-standing, stiffen, frame, sturdy, reinforce, quality, distance, near, close, wide, narrow, deep, shallow, thick, thin.

Cross curricular links	Cross curricular links	Cross curricular links
Literacy – writing Numeracy – Measuring/weighing/statistics Science – Materials and their properties RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics	Literacy – writing Numeracy – Measuring/weighing/statistics Science – Forces RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics	Literacy – writing Numeracy – Measuring/weighing/statistics Science – Forces RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - 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	• 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	• 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

• 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 • 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	• Combine materials for strength and to improve how the product looks • Use permanent and temporary fastenings to join • 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	• Carry out tests before making improvements • Evaluate food by taste, texture, flavour etc.

Year 4 – Choose from: Areas of Study		
Textiles • Can they consider which materials are fit for purpose and join them appropriately? • Can they devise a template or pattern for their product?	**Electrical and Mechanical Components** • Can they use a simple circuit and add components to it? • Can they make a product which uses both electrical and mechanical components?	**Construction** • Can they measure accurately to build effective structures? • Can they use a range of techniques to shape and mould? • 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.
KEY CONTENT **LTa STEM KITS - cobwebbing** **Fashion club** Food and nutrition **Cereal Bars** and Packaging.	**KEY CONTENT** **(SCIENCE LINK – ALARMS y4 - IN SCIENCE LESSONS** Using a shoe box and simple circuit create a model house with an alarm.)	**KEY CONTENT** **LTa STEM KITS - cobwebbing** **POP UP BOOKS** Design and make a pop up book for a KS1 child.
VOCABULARY Cereal, farm, produce, make, recipe, oats, honey, butter, ingredients, etc **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – States of matter / solids/liquids/gases RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics	Shoe box, circuit, components, buzzer, wires, batteries, alarm, open, shut, on, off, etc **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – Electricity / conductors/Insulators RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics	Book, lever, slider, pop up, flap, glue, cut, stick, page, evaluate, paper, card etc **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – Forces RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - 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** • 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	• 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 • 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	• 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 • 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 – Choose from: Areas of Study		
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?	**Mechanical Components** • Can they refine their product after testing it?	**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?
KEY CONTENT **BAG FOR LIFE PROJECT**	**KEY CONTENT** **GLIDERS – STEM** **BREAD**	**KEY CONTENT** **CERAMIC DESIGN – CONTAINERS**
VOCABULARY Sew, stitch, fabric, fix, join, ribbon, thread string, needle, weave, plan, evaluate **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – Working Scientifically – Planning and Prep. Properties and changes of materials RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics	Cereal, farm, produce, make, recipe, bread, bread types, honey, butter, flour, yeast, ingredients, etc **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – Forces RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics	Design, make, craft, plan, evaluate, clay, tools, dry, moist, kiln, **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – properties and changes of materials RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - 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 • 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	• 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 • 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	• 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 information supports their own designs • Evaluate a range of different sources of information such as advertising and handbooks

Year 6 – Choose from: Areas of Study		
	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?	**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?
KEY CONTENT	**KEY CONTENT** **STEM – OZBOTS / LEGO KITS – CONTROL** **LTa kits – Wheelbarrows** **Buggies**	**KEY CONTENT** **SHELTERS AND BRIDGES**
VOCABULARY	Lego, kit, instructions, test, fault **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – Materials and their properties / Light / Electricity RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics	Shelter, structure, shape, design, strong, weak, flap, glue, cut, stick, triangle, evaluate, paper, card etc **Cross curricular links** Literacy – writing Numeracy – Measuring/weighing/statistics Science – Materials and their properties / Forces RE/HISTORY/GEOGRAPHY – Decorative features / Aesthetics ICT – Planning and research Art - Decorative features / Aesthetics PSHE - Decorative features / Aesthetics

Design Technology Word Mat

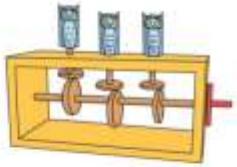
function

mechanism

design

equipment

join

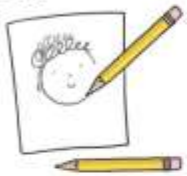


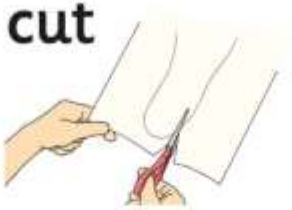
draw

cut

practical

template





tool

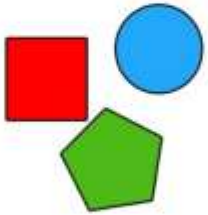
mock-up

develop

shape

material

computer



finish

textile

build

cooking

evaluate

ingredient

model

make

recipe

construct

structure

product

Skills Map – Growing, Cooking and Nutrition		
Lower Key Stage 2		
Growing - Pupils can …	**Cooking – Pupils …**	**Nutrition – Pupils …**
• Name the sources of common ingredients found in meals. • Name some foods produced in the UK. Can they name some foods produced outside the UK. • Explain the climate and conditions affect when and where food is produced. See Science Coordinator for science topic links here	• Know that there is a vast range of ingredients used around the world. • Can understand that diets around the world are based on similar food groups. • Know that food is prepared in different ways due to a number of factors, including country, culture, custom and religion. • Can use the eat-well plate and consider the needs of different people when planning and cooking food. • Can suggest and demonstrate healthier ways to prepare and cook foods. • Can read and interpret basic nutrition information on food packaging when making choices. • Can plan and prepare food appropriate for a range of different occasions.	• Can understand that a range of factors determine what is eaten throughout the world. • Can see the differences between diets varying in individuals for reasons such as availability, preference, resources, time, culture and religion. • Can understand that a variety and balance of food and drink is needed in a healthy diet. • Can identify and classify unfamiliar and composite dishes according to the 5 groups depicted in the eat-well plate? • Can understand that different diets may comprise similar raw foods combined in different ways? • Can understand the different proportions of the model in relation to their own diet? • Can use the eat-well plate when devising meals and menus for themselves and others? See Science Coordinator for science topic links here

	Year 3 Healthy sandwiches / PIZZAS Year 4 Flap Jacks/ healthy biscuits	

Skills Map – Growing, Cooking and Nutrition	
Lower Key Stage 2	
Food	**Enjoying Food**
• Can they combine fresh, precooked and processed foods according to their sensory characteristics? • Do they consider that people have different preferences? • Can they explore databases that are useful for holding survey information? • Can they divide food into different groups? Can they recognise foods that form a healthy diet? Can they explore different combinations of ingredients that can affect the taste and texture of the product? • Can they use appropriate language related to food products? Can they explain the importance of hygienic food preparation and storage? • Can they recognise that combinations of ingredients, preparation and cooking can affect the end product?	• Do they understand the important social aspects of food and how families in the past used to eat? • Can they explain that lots of food ingredients are used around the world? • Can they experience food from a different culture and comment on their opinions? • Can they recognise that diets around the world are based on the 5 food groups? • Can they use their prior skills to create food for special occasions? See Science/RE/Geog Coordinator for topic links here

Skills Map – Growing, Cooking and Nutrition		
Upper Key Stage 2		
Growing - Pupils can …	**Cooking – Pupils can …**	**Nutrition – Pupils can …**
• Can explain that food goes through basic processes before it reaches us. • Can explain how that at home we process food to make it edible and safe. • Can describe how food is processed on a large scale in places such as restaurants and factories to make it edible and safe to eat. See Science Coordinator for science topic links here	• Write and follow recipes. • Weigh and measure accurately. • Select and use the most appropriate ingredients and equipment to plan and cook a range of dishes. • Can modify existing recipes. • Can demonstrate an extended range of food skills and techniques. • Can describe how food can spoil and decay due to the action of microbes, insects and other pests. • Can explain how to use date marks and food storage instructions on food packaging. • Can demonstrate good personal hygiene when cooking. • Can demonstrate good food safety and hygiene when cooking. Year 5 Bread Making Year 6 Plan and Prepare a healthy meal (After SATS Science lessons)	• Understand that different types of food provide different amounts of energy. • Can demonstrate how different amounts of food, known as portions, provide different amounts of energy. • Can explain that all food and drink provide nutrients. • Can explain that other nutrients include vitamins and minerals, which are needed to keep the body healthy. • Can describe how some foods also provide fibre but the body doesn't digest this. • Can recognise that the amount of energy and nutrients provided by food depends on the portion eaten. • Understand that energy is provided by the nutrients, carbohydrates fat and protein. • Can understand the functions of different nutrients. • Can recognise the nutrients provided by each section of the eat-well plate. See Science Coordinator for science topic links here

Skills Map – Growing, Cooking and Nutrition	
Upper Key Stage 2	
Food – Pupils …	**Enjoying Food – Pupils …**
• Can adapt a recipe by adding or substituting an ingredient. • Can change ingredients by using a heat source. • Can recognise that there is a wide variety of food products from different cultural traditions. • Can recognise that different food products are an important part of a balanced diet. • Can investigate and evaluate bread products according to their characteristics. • Can use appropriate vocabulary to describe different food products. • Can compare the processes involved in making different food products – commercial and domestic. • Can recognise that ingredients have different characteristics. • Know that the proportion of ingredients will affect the product. • Can apply the rules for basic food hygiene and other safe practices Year 5 Bread Making Year 6 Plan and Prepare a healthy meal (After SATS Science lessons) See Science Coordinator for science topic links here	• Can recognise that food around the world is prepared in different ways, sometimes because of culture, customs and religion. • Know about a country and how its customs and culture can affect the food people eat. • Can describe an experience of trying food from a different culture? Do they understand how different families eat their meals and know how to use basic cooking skills and equipment to prepare food. • Can describe their experience the part food has to play in special, social occasions. See Science/RE/Geography Coordinator for topic links here **Vocabulary – All year groups** food preparation: bake -To cook in an oven. baste -To coat with oil while roasting. beat -To mix with a fork or whisk. boil -To cook in water held at boiling point. dice -To cut into cubes. glaze -To coat with egg or milk to give a shiny finish after baking. grill -To cook close to a heat source. knead -To form a dough mixture. Roast- To baste with hot oil to keep food moist while cooking in an oven. rub in -To mix together flour and fat using the fingertips until it resembles fine breadcrumbs. set -To allow a liquid or runny mixture to solidify when cooled. Simmer- To almost boil, but where bubbles only break the surface from time to time.