ADMAT Vertical Skills Progression Map

Design and Technology Skills Progression – KS1 and KS2	
Checked by School Leader/l Key Stage Leader	***J Phillpotts***
Checked by School Curriculum Leader	***J Phillpotts***
Monitoring	Each individual school is responsible for ensuring the delivery of the National Curriculum 14 intentions within the school. The school is required to regularly monitor the delivery of this Vertical Skills Progression Map. The school must complete an annual review of its School Vertical Progression Map to check the implementation of curriculum skills. Ongoing monitoring of planning, learning evidence and pupil knowledge will take place as part of good practice by subject and school leaders. Information from monitoring will be used to inform in school/ MAT CPD subject training.
Curriculum Statement **National Curriculum 2014**	**Purpose of Study** Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation. **Aims** The national curriculum for design and technology aims to ensure that all pupils: • develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world • build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users • critique, evaluate and test their ideas and products and the work of others • understand and apply the principles of nutrition and learn how to cook. **Assessment** By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Key Stage 1

Subject Content

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

Cooking and Nutrition Subject Content

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

National Curriculum 2014
Key Stage 1

Learning Intentions Pupils should be taught about:	Non-Statutory
Design design purposeful, functional, appealing products for themselves and other users based on design criteria generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology **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 and ingredients, according to their characteristics **Evaluate** ▪ explore and evaluate a range of existing products ▪ evaluate their ideas and 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. **Cooking and Nutrition** ▪ use the basic principles of a healthy and varied diet to prepare dishes ▪ understand where food comes from.	▪ [for example, cutting, shaping, joining and finishing] ▪ [for example, levers, sliders, wheels and axles],

Learning Progression Key Stage 1				
Designing	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Understanding contexts, users and purposes	State what products they are designing and making Say whether their products are for themselves or other users	Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment Describe what their products are for Say how their products will work Use simple design criteria to help develop their ideas	Say how they will make their products suitable for their intended users
	Generating, developing, modelling and communicating ideas	Generate ideas by drawing on their own experiences	Use knowledge of existing products to help come up with ideas Develop and communicate ideas by talking and drawing	Model ideas by exploring materials, components and construction kits and by making templates and mock-ups Use information and communication technology, where appropriate, to develop and communicate their ideas
Making	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Planning	Plan by suggesting what to do next	Select from a range of tools and equipment, explaining their choices	Select from a range of materials and components according to their characteristics
	Practical skills and techniques	Begin to use procedures for safety and hygiene	Follow procedures for safety and hygiene	Confidently follow procedures for safety and hygiene. Explaining procedures to others.

		Use a materials and components to make a product Begin to assemble, join and combine materials and components	Use materials and components, including construction materials and kits, textiles, food ingredients and mechanical components Measure, mark out, cut and shape materials and components Assemble, join and combine materials and components Use finishing techniques, including those from art and design	Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components With increasing accuracy measure, mark out, cut and shape materials and components With confidence assemble, join and combine materials and components Use finishing techniques, including those from art and design, explaining their reasoning.
Evaluating	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Own ideas and products	Talk about their design ideas and what they are making	Make simple judgements about their products and ideas against design criteria	Suggest how their products could be improved based on the success criteria
	Existing products	Explain what products are Who products are for What products are for	Explain what products are Who products are for What products are for How products work Suggest how products are used Suggest where products might	Explain how products work Suggest how products are used, giving reasons for their views Suggest where products might be used Suggest what materials products are made from and suggesting why materials have been chosen

			be used Suggest what materials products are made from Explain what they like and dislike about products	Explain what they like and dislike about products, giving reasons for their views
Technical Knowledge	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Making products work	Talk about the simple working characteristics of materials and components	Talk about the movement of simple mechanisms such as levers, sliders, wheels and axles Explain how freestanding structures can be made stronger, stiffer and more stable Know that a 3-D textiles product can be assembled from two identical fabric shapes	Know that food ingredients should be combined according to their sensory characteristics Know the correct technical vocabulary for the projects they are undertaking
Cooking and Nutrition	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Where food comes from	Begin to recognise that all food comes from plants or animals Begin to recognise that food has to be farmed, grown elsewhere (e.g. home) or caught	Know that all food comes from plants or animals Know that food has to be farmed, grown elsewhere (e.g. home) or caught	Know and explain that all food comes from plants or animals, giving some examples Know and explain that food has to be farmed, grown elsewhere (e.g. home) or caught, giving examples
	Food, preparation and cooking	Begin to name and sort foods into the five groups in the eat-well plate Know that everyone should eat	Able to name and sort foods into the five groups in the eat-well plate Know that everyone should eat	Confidentially able to name and sort a number of foods into the five groups in the eat-well plate Confidently able to explain why

		at least five portions of fruit and vegetables every day Begin to know how to use techniques such as cutting, peeling and grating	at least five portions of fruit and vegetables every day, suggesting different fruits and vegetables Know how to prepare simple dishes safely and hygienically, without using a heat source Know how to use techniques such as cutting, peeling and grating	everyone should eat at least five portions of fruit and vegetables every day, suggesting different fruits and vegetables Able to explain how to prepare simple dishes safely and hygienically, without using a heat source Know how to use techniques such as cutting, peeling and grating and confidently carry these techniques out when producing a product.

Key Stage 2

Subject Content

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

Cooking and Nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

National Curriculum 2014
Key Stage 2

Learning Intentions Pupils should be taught about	Non-Statutory
Design ▪ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups ▪ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams,	

prototypes, pattern pieces and computer-aided design **Make** ▪ select from and use a wider range of tools and equipment to perform practical tasks accurately ▪ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities **Evaluate** ▪ investigate and analyse a range of existing products ▪ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work ▪ understand how key events and individuals in design and technology have helped shape the world **Technical knowledge** ▪ 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 ▪ apply their understanding of computing to program, monitor and control their products. **Cooking and Nutrition** ▪ 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.	▪ for example, [cutting, shaping, joining and finishing] ▪ [for example, gears, pulleys, cams, levers and linkages] ▪ [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Learning Progression
Lower Key Stage 2

Designing	Progression Statement	Working Towards	Working At	Working Beyond
	Understanding contexts, users and purposes	Work within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment Begin to describe the purpose	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment Describe the purpose of their	Develop their own design criteria and use these to inform their ideas

		of their products	products Indicate the design features of their products that will appeal to intended users Explain how particular parts of their products work Gather information about the needs and wants of particular individuals and groups	
	Generating, developing, modelling and communicating ideas	Share and clarify ideas through discussion Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas	Share and clarify ideas through discussion Model their ideas using prototypes and pattern pieces Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas Use computer-aided design to develop and communicate their ideas Generate realistic ideas, focusing on the needs of the user	Make design decisions that take account of the availability of resources
Making	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Planning	Select tools and equipment suitable for the task Select materials and components suitable for the	Select tools and equipment suitable for the task Begin to explain their choice of tools and equipment in relation	Explain their choice of tools and equipment in relation to the skills and techniques they will be using

		task	to the skills and techniques they will be using Select materials and components suitable for the task Begin to explain their choice of materials and components according to functional properties and aesthetic qualities Order the main stages of making	Explain their choice of materials and components according to functional properties and aesthetic qualities Confidently order the main stages of making
	Practical skills and techniques	Follow procedures for safety and hygiene Use materials and components from KS1 Measure, mark out, cut and shape materials and components Assemble, join and combine materials and components Apply a finishing technique	Follow procedures for safety and hygiene Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components Measure, mark out, cut and shape materials and components with some accuracy Assemble, join and combine materials and components with some accuracy Apply a range of finishing	Correctly follow procedures for safety and hygiene Confidently use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components With accuracy measure, mark out, cut and shape materials and components With accuracy assemble, join and combine materials and components Apply a range of finishing techniques, including those from

			techniques	art and design, with some accuracy
Evaluating	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Own ideas and products	Identify the strengths and areas for development in their products	Identify the strengths and areas for development in their ideas and products Consider the views of others to improve their work Refer to their design criteria as they design and make Use their design criteria to evaluate their completed products	Consider the views of others, including intended users, to improve their work Refer to their design criteria as they design and make to inform the marking process Use their design criteria to evaluate their completed products considering the intended user
	Existing products	Investigate and analyse: ▪ How well products have been designed ▪ How well products have been made ▪ Why materials have been chosen ▪ How well products work ▪ How well products achieve their purposes ▪ When products were designed and made ▪ Whether products can be recycled or reused	Investigate and analyse: ▪ How well products have been designed ▪ How well products have been made ▪ Why materials have been chosen ▪ What methods of construction have been used ▪ How well products work ▪ How well products achieve their purposes ▪ How well products meet user needs and wants ▪ Who designed and made the products? ▪ Where products were designed and made	Investigate and analyse: ▪ How well products have been designed for the intended user ▪ How well products have been made, based on research. ▪ Why materials have been chosen. Explaining their reasoning. ▪ What methods of construction have been used. Considering if other methods of construction would have been better. ▪ How well products work ▪ How well products achieve their purposes for the intended user

			▪ When products were designed and made ▪ Whether products can be recycled or reused	▪ How well products meet user needs and wants ▪ Who designed and made the products? ▪ Where products were designed and made and whether this has impacted on the product outcome ▪ When products were designed and made and whether this has impacted on the product outcome ▪ Whether products can be recycled or reused and its impact on the environment
	Key events and individuals	Begin to know of inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products	Know inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products	Confidently talk about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products
Technical Knowledge	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Making things work	That materials can be combined and mixed to create more useful characteristics That materials have both functional properties and aesthetic qualities	How to use learning from science to help design and make products that work How to use learning from mathematics to help design and make products that work The correct technical vocabulary for the projects they are undertaking How mechanical systems such as levers and linkages or pneumatic systems create	That mechanical and electrical systems have an input, process and output How to program a computer to control their products

			movement How simple electrical circuits and components can be used to create functional products How to make strong, stiff shell structures That a single fabric shape can be used to make a 3D textiles product That food ingredients can be fresh, pre-cooked and processed	
Cooking and Nutrition	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Where food comes from	Is aware that that a recipe can be adapted a by adding or substituting one or more ingredients That food is grown, reared and caught in the UK, Europe and the wider world	That a recipe can be adapted a by adding or substituting one or more ingredients That food is grown (such as tomatoes, wheat and potatoes),reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world	That a recipe can be adapted a by adding or substituting one or more ingredients to change the flavour to the product That food is grown (such as tomatoes, wheat and potatoes),reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. Giving reasoning why food can be sourced in different countries.
	Food preparation, cooking and nutrition	Beginning to know how to prepare and cook a savoury dish safely and hygienically including, where appropriate, the use of a heat source	Knows how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source	Can confidently prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source

		Starting to know techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Is aware that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the eat-well plate That to be active and healthy food and drink are needed to provide energy for the body	Knows how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Knows that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the eat-well plate Can explain that to be active and healthy food and drink are needed to provide energy for the body	Is able to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Explains that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the eat-well plate Can explain that to be active and healthy food and drink are needed to provide energy for the body giving explanations about why
Learning Progression Upper Key Stage 2				
Designing	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Understanding contexts, users and purposes	Describe the purpose of their products Indicate the design features of their products that will appeal to intended users Develop a simple design specification to guide their thinking	Work confidently within a different context, such as the home, school, leisure, culture, enterprise, industry and the wider environment Describe the purpose of their products Consider the design features of their products that will appeal to intended users Think about how particular parts of their products work	Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment Describe the purpose of their products to an audience using persuasive techniques Indicate the design features of their products that will appeal to intended users Explain how particular parts of their products work

			Carry out research, using surveys, interviews, questionnaires and web-based resources Consider the needs, wants, preferences and values of particular individuals and groups Develop a simple design specification to guide their thinking	Carry out in depth research, using surveys, interviews, questionnaires and web-based resources Identify and explain their needs, wants, preferences and values of particular individuals and groups Develop a design specification to guide their thinking
	Generating, developing, modelling and communicating ideas	Share through discussion Begin to model their ideas using prototypes and pattern pieces Begin to use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas Generate ideas for products	Share and clarify ideas through discussion Model their ideas using prototypes and pattern pieces Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas Use computer-aided design to develop and communicate their ideas Generate innovative ideas Make design decisions, taking account of constraints such as time and resources	Share and clarify ideas through discussion, taking on board the views of others Model their ideas using prototypes and pattern pieces, exploring many different approaches Confidently use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas Confidently use computer-aided design to develop and communicate their ideas Generate innovative ideas, drawing on research Make design decisions, taking

				account of constraints such as time, resources and cost
Making	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Planning	Select tools and equipment suitable for the task Select materials and components suitable for the task Explain their choice of materials and components Produce appropriate lists of tools, equipment and materials that they need	Select tools and equipment suitable for the task Explain their choice of tools and equipment in relation to the skills and techniques they will be using Select materials and components suitable for the task Explain their choice of materials and components according to functional properties Request appropriate tools, equipment and materials that they need Formulate step-by-step plans as a guide to making	Explain their choice of tools and equipment in relation to the skills and techniques they will be using Confidently select materials and components suitable for the task, naming the specific name of the materials and components Explain their choice of materials and components according to functional properties and aesthetic qualities Produce appropriate lists of tools, equipment and materials that they need Formulate step-by-step plans as a guide to making for others to confidently follow
	Practical skills and techniques	Know the procedures for safety and hygiene Use a wider range of materials and components than KS1 Measure, mark out, cut and shape materials and components	Follow procedures for safety and hygiene Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components	Follow procedures for safety and hygiene and supporting others to do so Accurately use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical

		Assemble, join and combine materials and components Apply a range of finishing techniques, including those from art and design Begin to use techniques that involve a number of steps	Accurately measure, mark out, cut and shape materials and components Accurately assemble, join and combine materials and components Accurately apply a range of finishing techniques, including those from art and design Use techniques that involve a number of steps Demonstrate resourcefulness when tackling practical problems	components Accurately measure, mark out, cut and shape materials and components to fine measurements Accurately assemble, join and combine materials and components to fine measurements Accurately apply a range of finishing techniques suitable for the product, including those from art and design Confidently use techniques that involve a number of steps Demonstrate resourcefulness when tackling practical problems and showing support to others
	Own ideas and products	Identify the strengths and areas for development in their ideas Consider the views of others, including intended users, to improve their work Begin to evaluate their ideas and products against their original design specification	Identify the strengths and areas for development in their ideas and products Consider the views of others, including intended users, to improve their work Begin to critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make	Identify the strengths and areas for development in their ideas and products and use this to refine their products Consider the views of others, including intended users, to improve their work and use this to refine their products Critically evaluate the quality of the design, manufacture and fitness for purpose of their

			Evaluate their ideas and products against their original design specification	products as they design and make Evaluate their ideas and products against their original design specification, identifying successes and next steps
	Existing products	Investigate and analyse: ▪ How well products have been designed ▪ How well products have been made ▪ Why materials have been chosen ▪ What methods of construction have been used ▪ How well products work ▪ How well products achieve their purposes ▪ How well products meet user needs and wants	Investigate and analyse: ▪ How well products have been designed ▪ How well products have been made ▪ Why materials have been chosen ▪ What methods of construction have been used ▪ How well products work ▪ How well products achieve their purposes ▪ How well products meet user needs and wants ▪ How much products cost to make ▪ How innovative products are ▪ How sustainable the materials in products are ▪ What impact products have beyond their intended purpose	Investigate and analyse: ▪ How sustainable the materials in products are ▪ What impact products have beyond their intended purpose
	Key events and individuals	Talk about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking	Investigate different inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking	Independently explore inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking

		products	products	products
Technical Knowledge	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Making products work	How to use learning from science to help design and make products that work How to use learning from mathematics to help design and make products that work That materials have both functional properties and aesthetic qualities That materials can be combined and mixed to create more useful characteristics How mechanical systems such as cams or pulleys or gears create movement	That mechanical and electrical systems have an input, process and output The correct technical vocabulary for the projects they are undertaking How more complex electrical circuits and components can be used to create functional products That a 3D textiles product can be made from a combination of fabric shapes That a recipe can be adapted by adding or substituting one or more ingredients	How to program a computer to monitor changes in the environment and control their products How to reinforce and strengthen a 3D framework
Cooking and Nutrition	**Progression Statement**	**Working Towards**	**Working At**	**Working Beyond**
	Where food comes from	That a recipe can be adapted a by adding or substituting one or more ingredients That food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world	That seasons may affect the food available How food is processed into ingredients that can be eaten	Explain that seasons may affect the food available, recognise what foods are available in different seasons How food is processed into ingredients that can be eaten or used in cooking
	Food preparation, cooking and nutrition	How to prepare and cook a variety of predominantly	That recipes can be adapted to change the appearance,	Knowing that recipes can be adapted to change the

		savoury dishes safely and hygienically including, where appropriate, the use of a heat source How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	taste, texture and aroma That different food and drink contain different substances	appearance, taste, texture and aroma, put this into practice in their own cooking That different food and drink contain different substances – nutrients, water and fibre – that are needed for health