DT Subject Leaders' Sequence and Progression Document

INTRODUCTION

The purpose of this document is to outline the approach and method that has been adopted to implement the Design and Technology curriculum at St. Andrew's. It sets out what we aim to achieve and the knowledge and understanding that we have apportioned to each class and key stage. The decisions made have been done so by reference to the school's *Mission Statement*, the staff and Governing Body's vision for the future of our school. This document summarises the organisation of the Design and Technology curriculum and the school's method of securing children's entitlement to essential knowledge and skills to equip them for the next stage of their education and for later life.

AIMS

- To ensure standards remain high and English and Maths is taught discretely
- To ensure reading remains a high priority
- To utilize the rich resource and history of our local community of Boothstown
- To support our school's values and ethos
- To ensure pupils leave as 'well rounded' and confident individuals
- To ensure the wider sports curriculum and the arts are a key focus

LIFESKILLS WE DEVELOP

- Resilience
- Assertiveness and confidence
- Self esteem
- Communication skills
- Social skills
- Coping skills
- Stress management
- Problem solving
- Emotional awareness

END POINTS IN THE CURRICULUM

Pupils are able to design and make products that solve real and relevant problems within a variety of contexts. They acquire a broad subject knowledge and make links to mathematics, science, engineering, computing and art. Children are inspired by engineers, designers, chefs and architects and are able to

create a range of structures, mechanisms, textiles, electrical systems and food products with a real life purpose.

INTENT

Knowledge and skills St Andrew's wants our pupils to achieve at each stage:

Early Years Foundation Stage

- During the EYFS pupils explore and use a variety of media and materials through a combination of child initiated and adult directed activities.

KS1

- Design: Children are able to use appropriate planning formats to design purposeful products.
- Make: Children are able to select and use a wide range of tools and materials that are suitable to make their product.
- Evaluate: Children are able to evaluate their own and existing products against a criteria.
- Technical Knowledge: Children are able to build and then improve different structures and explore and use various mechanisms.
- Cooking and Nutrition: Children will understand where food comes from and will be able to prepare a healthy, balanced dish.

KS2

- Design: Children are able to use research about a product to generate their own designs, recording these designs using various methods.
- Make: Children are able to accurately select and use the correct tools required in order to make their product.
- Evaluate: Children are able to investigate and analyse a range of products taking into consideration the opinions of others. Children understand the importance of inventors and the impact they have had on the world.
- Technical Knowledge: Children are able to use technology and various systems whilst making their products.
- Cooking and Nutrition: Children will be able to use a range of cooking tools to make and prepare savoury dishes and understand where we get our ingredients from.

All teaching of DT should follow the design, make and evaluate cycle. The design process should incorporate real life, relevant contexts to give meaning to learning. While making, children should be given choice and a range of tools to choose freely from. To evaluate, children should be able to evaluate their own products against a design criteria.

Key skills and key knowledge have been mapped across the school to ensure progression between year groups. This also ensures that there is no overlap and each year group is aware of the skills that need to be built upon from the previous year. The long term planner states what each year group is teaching and how each element from the curriculum fits into the topic. We use the Kapow scheme across the school which ensure that there is a breadth of coverage across the school and that there is no overlap of skills or lessons being duplicated. DT lessons are taught as stand-alone lessons but occasionally may link to topics that the children are learning about e.g. year 3 learn about Egyptians and create an Egyptian collar.

DT is taught to a high standard, where each of the stages of the DT curriculum are given equal weight. All children are included in DT lessons regardless of their needs.

CULTURAL CAPITAL

By the end of their time at St Andrew's, children will understand how key events and individuals in design and technology have helped shape the world that we live in today. Children will also understand the need for a variety of foods in our diets, where foods come from and how to prepare and cook various dishes.

IMPLEMENTATION

DT staff meetings have been delivered by the DT coordinator, who also attended CDP on what makes a good subject leader.
The subject is taught through discrete, (occasionally with a cross curricular link to the current topic) meaningful lessons. Children are taught through the three phases of designing, making and evaluating their own products. Each year group focuses on 2/3 topics throughout the year and each topic will focus on a separate set of skills. As children progress through the school, they are presented with opportunities to develop these skills, as they are revisited and built upon.
During DT lessons teachers use questioning to assess children's understanding of what has been taught throughout the lesson and any misconceptions are acknowledged, addressed and explained.
In DT lessons, many cross-curricular links are observed. For example Maths links, during cooking topics, where children are measuring out ingredients, as well as calculating the quantities for different recipes. Instructions are often created as part of the 'design' phase, which has a direct link to English. Science knowledge is practiced when children are creating products that contain electrical components.
DT is taught using cross curricular links to the topic that is being taught. Therefore skills are transferred from one lesson to another and used multiple times in order to embed this knowledge into the children's long term memory.
Assessment of children's learning in Design Technology is an ongoing monitoring of children's understanding, knowledge and skills by the class teacher throughout lessons. This assessment is then used to inform differentiation, support and challenge and to support the children.
Summative assessment is conducted by class teachers across each year group, using target tracker. This is used to inform the subject leader/teacher of progress or skills and knowledge still to be embedded.

IMPACT

We ensure that children develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. Pupils 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 and critique, evaluate and test their ideas and products and the work of others.

They understand and apply the principles of nutrition and learn how to cook. Children design and make a range of products. A good quality finish is expected in all design and activities made, appropriate to the age and ability of the child.

DT Long term Plan (Expressive Arts in EY) updated to new EY framework						
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Nursery **3-4**	Join and explore different materials Explore textures Develop ideas about using materials and what to make Develop ideas on which materials to use					
Reception	Return to and build on their previous learning Refine ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills					
Year 1		Mechanisms- making a moving story book		Food- fruit and veg		Structures- constructing Blackpool tower
Year 2		Structures – baby bear's chair		Textiles- pouches		Mechanisms- wheels and axels
Year 3		Textiles- Egyptian collars		Mechanical systems- pneumatic toys		Food- eating seasonally
Year 4			Electrical systems-torches	Textiles- fastenings		Structures- pavilions
Year 5		Mechanical systems – making a pop-up book		Food- what could be healthier	Structures- bridges	
Year 6	Electrical systems- steady hand game		Structures- earthquake proof structures			Digital world- navigating the world

	National Curriculum Content - DT updated to new EY framework
EY	Expressive Arts and Design
	Expressive Arts & Design
3-5	Join different materials and explore different textures Explore different materials freely, in order to develop their ideas about how to use them and what to make Develop their own ideas and then decide which materials to use to express them
Rec	Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills

KS1	**Coverage**	**Autumn**	**Spring**	**Summer**
	NC Skills	Pupils should develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world They should 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 They should critique, evaluate and test their ideas and products and the work of others They should understand and apply the principles of nutrition and learn how to cook. Pupils should be taught how to cook and apply the principles of nutrition and healthy eating.		
Y1	NC Content	**Mechanisms- making a moving story book**	**Food- fruit and veg**	**Structures- constructing a windmill**

		design purposeful, functional, appealing products for themselves and other users based on design criteria explore and evaluate a range of existing products select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics evaluate their ideas and products against design criteria	use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from. evaluate their ideas and products against design criteria	build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. elect from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] evaluate their ideas and products against design criteria
Y2		**<u>Structures –baby bear's chair</u>** explore and evaluate a range of existing products generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. build structures, exploring how they can be made stronger, stiffer and more stable evaluate their ideas and products against design criteria	**<u>Textiles-pouches</u>** explore and evaluate a range of existing products design purposeful, functional, appealing products for themselves and other users based on design criteria select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics evaluate their ideas and products against design criteria	**<u>Mechanisms- wheels and axels</u>** design purposeful, functional, appealing products for themselves and other users based on design criteria explore and evaluate a range of existing products explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. elect from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] evaluate their ideas and products against design criteria

KS2	Coverage	Autumn	Spring	Summer
	NC Skills	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]. Pupils should develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world They should 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 They should critique, evaluate and test their ideas and products and the work of others They should understand and apply the principles of nutrition and learn how to cook. Pupils should be taught how to cook and apply the principles of nutrition and healthy eating.		
Y3	NC Content	**<u>Textiles – Egyptian collar</u>** 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 use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose,	**<u>Food-eating seasonally</u>** 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	**<u>Mechanical systems-pneumatic toys</u>** 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 understand and use mechanical systems in their products [for

		aimed at particular individuals or groups evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	ingredients are grown, reared, caught and processed. evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	example, gears, pulleys, cams, levers and linkages] evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
Y4	NC Content	**Electrical systems –torches** understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products. evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	**Textiles-fastenings** 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 select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	**Strcutures-pavillions** 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 apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand how key events and individuals in design and technology have helped shape the world
Y5	NC Content	**Mechanical systems- making a pop up book** 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 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 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	**Food- what could be healthier**? 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. evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	**Structures- bridges** apply their understanding of how to strengthen, stiffen and reinforce more complex structures generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design investigate and analyse a range of existing products understand how key events and individuals in design and technology have helped shape the world 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
Y6		**Electrical systems – steady hand game** generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded	**Structures-earthquake proof structures** use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose,	**Digital world- navigating the world** understand how key events and individuals in design and technology have helped shape the world

		diagrams, prototypes, pattern pieces and computer-aided design understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products. evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	aimed at particular individuals or groups select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design apply their understanding of computing to program, monitor and control their products. 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 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

SKILLS					
YEAR 1	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**YEAR 6**
DT					
Making – planning practical skills and techniques					
*generate ideas and recognise characteristics of familiar products *use pictures and words to describe what they want to do *show that, with help, ideas can be put into practice *use tools and materials with help, where needed *choose materials from a range independently or suggested by teacher	*begin to generate ideas and plan what to do next, based on their experience of working with materials and components *use models, pictures and words to describe their designs *select appropriate tools, techniques and materials, explaining their choices *select and use tools from a range suggested by teacher *choose materials and techniques *use correct technical vocabulary for projects from a range selected by teacher *begin to assemble, join and combine	*generate ideas and begin to recognise that designs have to meet a range of different needs *clarify ideas when asked and begin to use words, labelled sketches and models to communicate the details of their designs *make realistic plan for achieving aims i.e. ordering the stages of making *begin to think ahead about the order of their work *begin to identify appropriate tools, equipment, materials, components and techniques	*generate ideas by collecting and using information, take users' views into account *begin to produce step-by-step plans *communicate alternative ideas using words, labelled sketches and models *begin to demonstrate an awareness of constraints *select appropriate tools, equipment, materials, components and techniques *select appropriate techniques to make product *measure, mark out, cut and shape	*draw on and use various sources of information *use understanding of the characteristics of familiar products when developing own ideas *clarify ideas through discussion, drawing and modelling demonstrate an awareness of constraints *work from their own detailed plans, modifying where appropriate *select appropriate tools and techniques to make product *explain the sensory qualities of different materials measure, mark out, cut and shape a	*draw on and use a range of sources of information including those of others *show understanding of form and function of familiar products *develop criteria for designs and use these to explore design proposals *produce plans that outline alternative methods of progressing *make models and drawings to explore and test their design thinking, discussing their ideas *produce step-by-step plans as a guide for making *select and use appropriate tools

	materials and components in a variety of ways	*select appropriate tools *measure, mark out, cut and shape a range of materials with a fair degree of accuracy *join, assemble and combine materials with a fair degree of accuracy *use simple finishing techniques to improve the appearance of the product *use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical	a range of materials accurately *join, assemble and combine materials accurately *use finishing techniques to strengthen and improve appearance of the product *demonstrate safe and careful procedures for handling food	range of materials with increasing precision *join, assemble and combine components with increasing precision *use a range of finishing techniques to strengthen and improve the appearance of the product *formulate step-by-step plans as a guide to making	and techniques and explain why they have been chosen *explain how different materials and processes might be used *measure, mark out, cut and shape a range of materials with increasing precision *join, assemble and combine components with increasing precision *use appropriate finishing techniques to strengthen and improve the appearance of the product *check work as it develops and modify approach in the light of progress *formulate step-by-step plans as a guide to making
Evaluating - own ideas and existing products					
*talk about their own and other people's work in simple terms *begin to describe how a product works *think of things they could have improved *talk about what and who products are for	*begin to recognise that they have done well as work progresses *begin to suggest things they could do better in the future *talk about how products are used and what materials are used	*compare own work with that of others *Say what they think and feel about their own work *Why materials were chosen	*reflect on their designs as they develop, bearing in mind the way the product will be used *begin to identify what is working well and what could be improved *discuss how real products have been designed and if they achieve their purpose	*begin to test and evaluate their products *show an understanding of the situations in which their designs will have to function *evaluate their products and their use of information sources *how well products have been designed and if designs achieve their purpose	*evaluate how effectively they have used information sources *reflect on the quality of design and quality of build as they work *recognise that the quality of the product depends on how well it meets its purpose *critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make *evaluate their ideas and products against their original design specification
Technical Knowledge					
*understand about the working characteristics of some materials *understand how mechanisms can be used in different ways *how free standing structures can be made stiffer and more stable *know that 3Dtextiles products	*explain about the working characteristics of common materials *explain how mechanisms can be used in different ways – levers, sliders, wheels and axles	*explain how the working characteristics of common materials affect the way they might be used *suggest how a mechanism could be used to make something move in a different way e.g. how mechanical systems such as levers and linkages	*explain how the working characteristics of materials affect the way they might be used *suggest how a mechanism could be used to make something move in a different way *use electrical circuits with	*think how materials might be combined to create more useful properties *suggest how a mechanism such as a belt and a pulley could be used to make something move in a different way *use electrical circuits with motors	*suggest materials that could be combined for properties such as strength *use ICT control programme to make a mechanism work *create mechanical systems such as cars, pulleys or gears to create movement *know more complex electrical

can be produced from identical 2D shapes e.g. puppets		or pneumatic systems create movement *know that a single fabric shape can be used to make a 3D textiles project	switches to good effect *suggest how to make strong stable structures *know how to program a computer to control their products	and switches to good effect *suggest how to reinforce and strengthen a 3D framework *know that a 3D textiles product can be made from a combination of fabric shapes	circuits and components can be used to create functional products *know how to program a computer to monitor changes in the environment and control their products *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