Stanton Harcourt
CE Primary School

Design Technology
Curriculum Handbook

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Curriculum Statement

Intent

At Stanton Harcourt CE Primary School the intent is to ensure all pupils produce creative, imaginative work. Children have the opportunity to explore their ideas and record their experiences, as well as exploring the work of others and evaluate different creative ideas. They are encouraged to record and reflect on these through the use of sketchbooks.

At Stanton Harcourt CE Primary we value Design Technology as an important part of children's entitlement to a broad and balanced curriculum. Our curriculum is designed to build upon children's prior learning through our progression documents and the use of our KCVs. We offer a structure and sequence of lessons to help teachers ensure they have covered the skills required to meet the aims of the national curriculum.

Through the curriculum, children will be exposed to a sound understanding of a range of famous designers and craft makers. Children will also develop their interest and curiosity about design and technology through a series of lessons offering skills progression, knowledge progression and offering children the opportunity to ask questions and demonstrate their skills in a variety of ways.

A high-quality Design Technology lesson should engage, inspire, and challenge pupils, equipping them with the knowledge and skills to experiment, invent and create their own design projects. As the children progress using small steps, they should be able to think critically and develop a mastered understanding of Design Technology.

Implementation

The teaching and implementation of Design Technology at Stanton is based on the National Curriculum and is structured around the strands of:

- Structures
- Mechanisms and Mechanical Structures
- Electrical Systems
- Textiles
- Cooking and Nutrition
  Digital World

Each KCV gives an overview of any associated prior learning or skill, which can then be built upon throughout the unit of work.
Each lesson looks at the same medium of Design Technology during a unit and builds upon these skills to enhance the use of this medium.

Each year group has a KCV with an overview of each unit of teaching to give the teacher and adults leading Design Technology confidence in what they are expected to teach.

Our teachers are aware of the progression of skills and knowledge in each unit and can use the curriculum handbook to enhance their knowledge of this.
Each Key Stage focuses on different themes built on previous learning to ensure continued interest in the subject as well as acquiring new knowledge.

Impact

As a result of the development of Design Technology at Stanton, the children are able to develop their use of DT to express themselves and help regulate their emotions.
As a Church of England school, the children have strong links with our local community and as a result can see the place that DT holds within the ‘real world’ thus linking well to our school vision: Living, Learning and Growing Together.

We want all children, when they leave Stanton Harcourt CE Primary School, to feel skilled and equipped in the process of designing, building and refining their ideas.

Recording

Children have their own sketchbooks, in which they can record their own thoughts, ideas and opinions. They use the pages to develop their skills and the progression of these skills throughout the units is clear. Teachers will take pictures of the children when they are using different tools and exploring different skills and techniques. These will either be stuck into the children's sketchbooks or put onto our school website for parents to see.

Assessment

To assess DT at Stanton, teachers reflect on the skills which are documented on the KCVs throughout the topic, then how well they have been applied to a final piece of art. In order to support understanding and allow teachers to make judgements, key concept questions can also be used to further assess the children. Evaluation of their own work also plays a part in the assessment process, as does critiquing the work of others.

Inclusion

DT at Stanton is for everyone. To help promote inclusivity, the curriculum has been designed to deliver a wide range of DT. Pupils will be given the opportunity to use a range of tools throughout each topic. These will be altered and adapted to enable all children to access each opportunity. The range of topics are designed to encourage children with all interests to engage with creative art. Here at Stanton, all DT lessons ensure every child has an equal chance of learning, regardless of whether they might have a disability or a special need. The ethos generated around our lessons promotes developing and

boosting everyone's self-confidence.

Cultural Capital

Our school aims to engage all pupils in DT. When completing different units, children will be exposed to the Design and Techonolgy skills embedded in a range of projects which use different materials and serve a wide range of purposes.

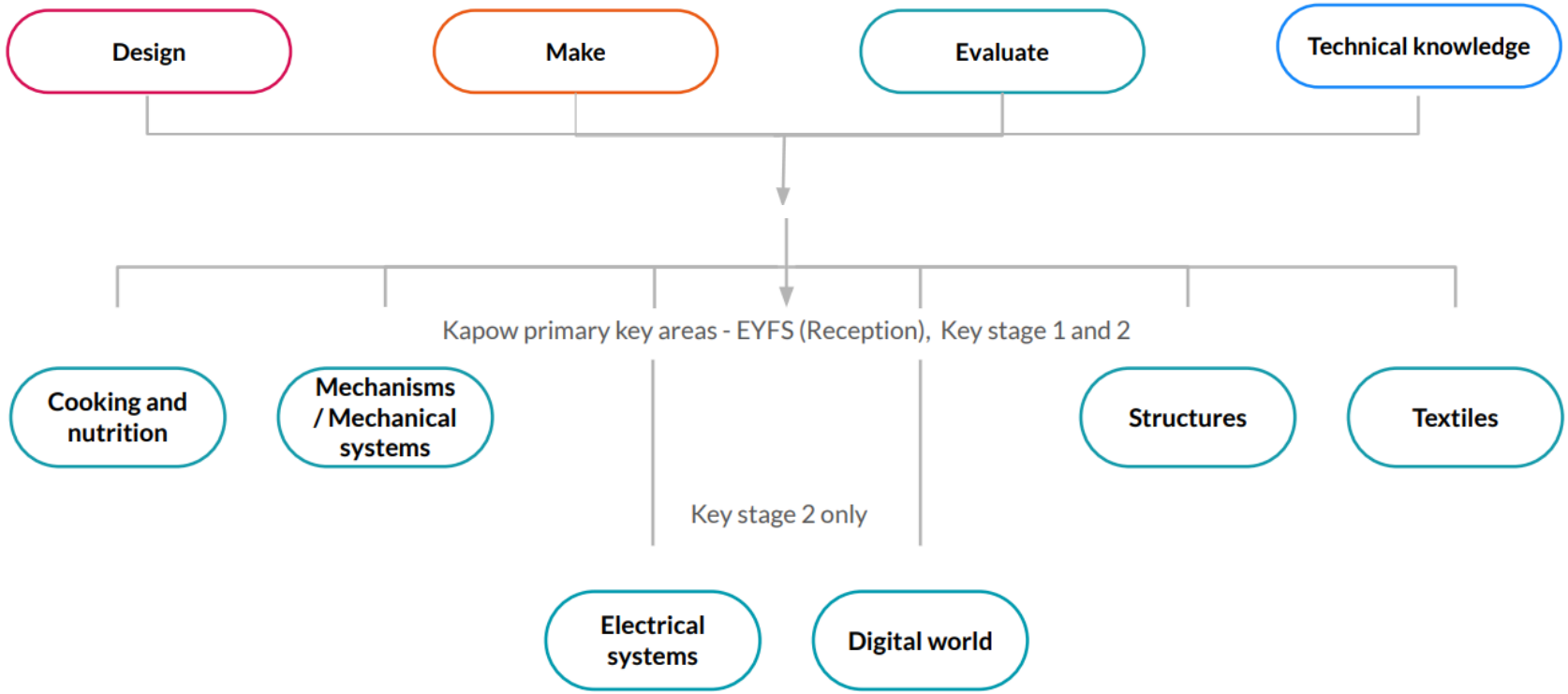
Links will be made between all the learning the children complete and the range of aspects of Design Technology allows for children with different interests to be engaged with DT.

A wide range of tools, techniques and materials will be used to ensure children from all backgrounds have exciting opportunities which they may not have access to outside of the school environment.

Curriculum Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2 A		Structures: Baby Bear's Chair		Cooking and Nutrition: A Balanced Diet		Mechanisms: Fairground Wheel
Year 1/2 B		Structures: Constructing a Windmill		Textiles: Puppets		Mechanisms: Making a Moving Monster
Year 3/4 A		Mechanical systems: Making a Slingshot Car		Cooking and Nutrition: Eating Seasonally		Structures: Constructing a Castle
Year 3/4 B		Electrical Systems: Torches		Digital World: Electronic Charm		Structures: Pavilions
Year 5/6 A		Electrical Systems: Doodlers		Structures: Playgrounds		Digital World: Navigating the World
Year 5/6 B		Textiles: Waistcoat		Mechanical Systems: Making a Pop-up Book		Cooking and Nutrition: What could be healthier?

Curriculum Skills Progression



National Curriculum Objectives

National Curriculum Objectives		
EYFS	**KS1**	**KS2**
Expressive Arts and Design (Exploring and Using Media and Materials) Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Expressive Arts and Design (Being Imaginative) Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and	Pupils should be taught: **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 [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** *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	Pupils should be taught: **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 [for example, cutting, shaping, joining and finishing], 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 [for example, gears, pulleys, cams, levers and linkages]

technology, art, music, dance, role play and stories.	*explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products	*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 product

STRUCTURES			
Foundation	**Year 1/2**	**Year 3/4**	**Year 5/6**
Pupils should be taught to: Return to and build on their previous learning, refining ideas and developing their ability to represent them. ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Pipils should be taught to: Learning the importance of a clear design criteria. Including individual preferences and requirements in a design. Making stable structures from card, tape and glue. Learning how to turn 2D nets into 3D structures. Following instructions to cut and assemble the supporting structure of a windmill. Making functioning turbines and axles which are assembled into a main supporting structure. Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects. Making a structure according to design criteria. Creating joints and structures from paper/card and tape. Building a strong and stiff structure by folding paper. Exploring the features of structures. Comparing the stability of different shapes. Testing the strength of their own structures.	Pupils should be taught to: Designing a castle with key features to appeal to a specific person/purpose. Drawing and labelling a castle design using 2D shapes. Designing and/or decorating a castle tower on CAD software. Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. Making facades from a range of recycled materials. Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. Suggesting points for modification of the individual designs. Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. Building frame structures designed to support weight. Creating a range of different shaped frame structures. Making a variety of free-standing frame structures of different shapes and sizes. Selecting appropriate materials to build a	Pupils should be taught to: Designing a playground featuring a variety of different structures, giving consideration to how the structures will be used. Considering effective and ineffective designs. Building a range of play apparatus structures drawing upon new and prior knowledge of structures. Measuring, marking and cutting wood to create a range of structures. Using a range of materials to reinforce and add decoration to structures. Improving a design plan based on peer evaluation.

	Identifying the weakest part of a structure.	strong structure and for the cladding. Reinforcing corners to strengthen a structure	Testing and adapting a design to improve it as it is developed. Identifying what makes a successful structure.

TEXTILES			
Foundation	**Year 1/2**	**Year 3/4**	**Year 5/6**
Pupils should be taught to: Explore, use and refine a variety of artistic effects to express their ideas and feelings. ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. ELG: Creating with materials: Share their creations, explaining the process they have used.	Pupils should be taught to: Using a template to create a design for a puppet. Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing steps for construction. Reflecting on a finished product, explaining likes and dislikes.		Pupils should be taught to: Designing a waistcoat in accordance with a specification and design criteria to fit a specific theme. Annotating designs. Using a template when pinning panels onto fabric. Marking and cutting fabric accurately, in accordance with a design. Sewing a strong running stitch, making small, neat stitches and following the edge. Tying strong knots. Decorating a waistcoat – attaching objects using thread and adding a secure fastening. Learning different decorative stitches. Sewing accurately with even regularity of stitches. Evaluating work continually as it is created.

COOKING AND NUTRITION			
Foundation	**Year 1/2**	**Year 3/4**	**Year 5/6**
Pupils should be taught to: ELG: Speaking: Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. Personal, social and emotional development. Know and talk about the different factors that support their overall health and wellbeing: healthy eating. ELG: Managing self: Manage their own basic hygiene and personal needs, including… understanding the importance of healthy food choices Explore, use and refine a variety of artistic effects to express ideas and feelings. ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form	Pupils should be taught to: Design three wrap ideas based on a food combination which work well together. Chop foods safely to make a wrap. Construct a wrap that meets a design brief. Grate foods to make a wrap. Snip smaller foods instead of cut. Describing the taste, texture and smell of fruit and vegetables. Taste testing food combinations and final products. Describing the information that should be included on a label. Evaluating food by giving a score.	Pupils should be taught to: Design a recipe for a savoury tart. Follow the instructions within a recipe. Establish and use design criteria to help test and review dishes. Describe the benefits of seasonal fruits and vegetables and the impact on the environment. Suggest points for improvement when making a seasonal tart	Pupils should be taught to: Adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. Write an amended method for a recipe to incorporate the relevant changes to ingredients. Design appealing packaging to reflect a recipe. Cut and prepare recipes safely. Use equipment safely, including knives, hot pans and hobs. Know how to avoid cross-contamination. Follow a step-by-step method carefully to make a recipe.

and function.			

MECHANISM			
Foundation	**Year 1/2**	**Year 3/4**	**Year 5/6**
	Pupils should be taught to: Select a suitable linkage system to produce the desired motions. Design a wheel. Selecting appropriate materials based on their properties. Selecting materials according to their characteristics. Follow a design brief. Evaluate different designs. Test and adapt a design. Select a suitable linkage system to produce the desired motions. Design a wheel. Select appropriate materials based on their properties. Select materials according to their characteristics. Follow a design brief.	Pupils should be taught to: Design a shape that reduces air resistance. Draw a net to create a structure from. Choose shapes that increase or decrease speed as a result of air resistance. Personalise a design. Measure, marking, cutting and assembling with increasing accuracy. Make a model based on a chosen design. Evaluate the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.	Pupils should be taught to: Develop design criteria based on findings from investigating existing products. Develop design criteria that clarifies the target user. Alter a product's form and function by tinkering with its configuration. Make a functional series circuit, incorporating a motor. Construct a product with consideration for the design criteria. Break down the construction process into steps so that others can make the product. Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. Determine which parts of a product affect its function and which parts affect its form.

	Evaluate different designs. Test and adapt a design.		

DIGITAL WORLD			
Foundation	**Year 1/2**	**Year 3/4**	**Year 5/6**
		Pupils should be taught to: Develop design criteria based on findings from investigating existing products. Develop design criteria that clarifies the target user. Alter a product's form and function by tinkering with its configuration. Make a functional series circuit, incorporating a motor. Construct a product with consideration for the design criteria. Break down the construction process into steps so that others can make the product. Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. Determine which parts of a product affect its function and which parts affect its form	Pupils should be taught to: Write a design brief from information submitted by a client. Develop design criteria to fulfil the client's request. Develop a product idea through annotated sketches. Place and manoeuvr 3D objects, using CAD. Change the properties of, or combine one or more 3D objects, using CAD. Consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). Explain material choices and why they were chosen as part of a product concept.

ELECTRICAL SYSTEMS

Foundation	Year 1/2	Year 3/4	Year 5/6
		Pupils should be taught to: Designia torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. Make a torch with a working electrical circuit and switch. Use appropriate equipment to cut and attach materials. Assemble a torch according to the design and success criteria. Evaluate electrical products. Test and evaluate the success of a final product.	Pupils should be taught to: Identify factors that could be changed on existing products and explaining how these would alter the form and function of the product. Develop design criteria based on findings from investigating existing products. Develop design criteria that clarifies the target user. Alter a product's form and function by tinkering with its configuration. Make a functional series circuit, incorporating a motor. Construct a product with consideration for the design criteria. Break down the construction process into steps so that others can make the product. Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.

Key Knowledge Through DT

Year 1 & 2

By the end of KS1 children will have gained the following knowledge:

Structures: Baby bear's chair

To generate and communicate ideas using sketching and modelling.
To learn about different types of structures, found in the natural world and in everyday objects.
To make a structure according to design criteria. Creating joints and structures from paper/card and tape.
To build a strong and stiff structure by folding paper.
To explore the features of structures.
To compare the stability of different shapes.
To test the strength of their own structures.
To identify the weakest part of a structure.
To evaluate the strength, stiffness and stability of their own structure.

Cooking and Nutrition: Fruit and Vegetables

To understand the difference between fruits and vegetables.
To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).
To know that a blender is a machine which mixes ingredients together into a smooth liquid.
To know that a fruit has seeds and a vegetable does not. To know that fruits grow on trees or vines.
To know that vegetables can grow either above or below ground.
To know that vegetables can come from different parts of the plant.

Mechanisms: Fairground Wheel

To know that different materials have different properties and are therefore suitable for different uses.
To know the features of a Ferris wheel include the wheel, frame, pods, a base, an axle and an axle holder.
To know that it is important to test my design as I go along so that I can solve any problems that may occur.

Structures: Constructing a Windmill

To understand that the shape of materials can be changed to improve the strength and stiffness of structures.
To understand that cylinders are a strong type of structure (and, therefore, they are the main shape used for windmills and lighthouses).
To understand that axles are used in structures and mechanisms to make parts turn in a circle.
To begin to understand that different structures are used for different purposes.

To know that a structure is something that has been made and put together.

Textiles: Puppets
To know that 'joining technique' means connecting two pieces of material together.
To know that there are various temporary methods of joining fabric by using staples, glue or pins.
To understand that different techniques for joining materials can be used for different purposes.
To understand that a template (or fabric pattern) is used to cut out the same shape multiple times.
To know that drawing a design idea is useful to see how an idea will look.

Mechanisms: Making a moving Monster
To know that different materials have different properties and are therefore suitable for different uses.
To know the features of a Ferris wheel, include the wheel, frame, pods, a base, an axle and an axle holder.
To know that it is important to test my design as I go along so that I can solve any problems that may occur.

Year 3 & 4

By the end of the year children will have gained the following knowledge:

Mechanical systems: Making a slingshot car
To understand that all moving things have kinetic energy.
To understand that kinetic energy is the energy that something (object/person) has by being in motion.
To know that air resistance is the level of drag on an object as it is forced through the air.
To understand that the shape of a moving object will affect how it moves due to air resistance.

Cooking and nutrition: Eating Seasonally
To know that not all fruits and vegetables can be grown in the UK.
To know that climate affects food growth.
To know that vegetables and fruit grow in certain seasons.
To know that cooking instructions are known as a 'recipe'.
To know that imported food is food that has been brought into the country.

Structures: Constructing a Castle
To understand that wide and flat based objects are more stable.
To understand the importance of strength and stiffness in structures.
To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse – and their purpose.

To know that a façade is the front of a structure.
To understand that a castle needed to be strong and stable to withstand enemy attack.

Electrical Systems: Torches
To understand that electrical conductors are materials which electricity can pass through.
To understand that electrical insulators are materials which electricity cannot pass through.
To know that a battery contains stored electricity that can be used to power products.
To know that an electrical circuit must be complete for electricity to flow.
To know that a switch can be used to complete and break an electrical circuit.

Digital World: Electric Charm
To understand that in programming a 'loop' is code that repeats something again and again until stopped.
To know that a Micro:bit is a pocket-sized, codeable computer.
To write a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.

Structures: Pavilions
To understand what a frame structure is.
To know that a 'free-standing' structure is one that can stand on its own.
To know that a pavilion is a decorative building or structure for leisure activities.
To know that cladding can be applied to structures for different effects.
To know that aesthetics are how a product looks.

Year 5 & 6

By the end of the year children will have gained the following knowledge:

Electrical systems: Doodlers
To know that, in a series circuit, electricity only flows in one direction.
To know when there is a break in a series circuit, all components turn off.
To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.
To know a motorised product is one which uses a motor to function.

Structure: Playgrounds
To know that structures can be strengthened by manipulating materials and shapes.
To understand what a 'footprint plan' is.
To understand that in the real world, design can impact users in positive and negative ways.
To know that a prototype is a cheap model to test a design idea.

Digital World: Navigating the world
To know that accelerometers can detect movement.
To understand that sensors can be useful in products as they mean the product can function without human input.
To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.
To know that 'multifunctional' means an object or product has more than one function.
To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.

Textiles: Waistcoats
To understand that it is important to design clothing with the client/target customer in mind.
To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric.
To understand the importance of consistently sized stitches.

Mechanical systems: Making a pop-up book
To know that, in a series circuit, electricity only flows in one direction.
To know when there is a break in a series circuit, all components turn off.
To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.
To know a motorised product is one which uses a motor to function.
To identify factors that could be changed on existing products and explaining how these would alter the form and function of the product.

Cooking and nutrition: What could be healthier?
To understand where meat comes from – learning that beef is from cattle and how beef is reared and processed, including key welfare issues.
To know that I can adapt a recipe to make it healthier by substituting ingredients.
To know that I can use a nutritional calculator to see how healthy a food option is.
To understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.