Hunton & Arrathorne Community Primary School

Curriculum Document: Design Technology

INTENT - The Design & Technology Curriculum

Design and Technology is an inspiring, rigorous and practical subject.

Design and Technology encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team.

At Hunton & Arrathorne, we encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. We aim to, wherever possible, link work to other disciplines such as mathematics, science, engineering, computing and art. The children are also given opportunities to reflect upon and evaluate past and present design technology, its uses and its effectiveness and are encouraged to become innovators and risk-takers.

The substantive concepts of Design Technology: user, purpose, functionality, design decisions, innovation and authenticity are interwoven into all aspects of our Design Technology curriculum.

In order to teach the Design Technology curriculum effectively, teachers follow the Kapow scheme of learning for Design Technology. This empowers subject leaders and class teachers with up-to-date continuous professional development and ensures progression in knowledge and skills. Each class also focuses on a key designer or technologist during each block of learning taking into account 'the very best of what's been thought and said'.

Children take part in two 'DT Days' per term with the entire day devoted to the subject; in the summer term this always has a 'Food & Nutrition' focus.

IMPLEMENTATION - Rationale

We believe that Design & Technology should be inclusive to all. It should allow children to manage and take risks and develop their understanding of design processes – from research, initial designs, prototypes and final products.

We teach Design & Technology through 'Project Days' which are dedicated off-timetable from the rest of the curriculum and usually last two days. We hold these days twice a year. We believe that the exclusive time to focus on D&T projects allows children to gain a sufficient understanding and see links between other curriculum areas. We time these 'Project Days'
to allow visits and visitors to offer a broader range of experiential learning for our children. Often, our themed days culminate in a 'Celebration Event' where parents are invited to view not only the finished product, but also the entire making stage.

To support our teaching of Design Technology we follow the Design Technology Association's 'Projects on a Page' planning. This ensures that the substantive concepts of user, purpose, functionality, design decisions, innovation and authenticity are key features. Alongside this, we follow the Kapow scheme of learning throughout school.

Key skills and key knowledge for Design Technology have been mapped across the school to ensure progression between year groups. Due to the two year rolling programme, pupils will cover each aspect of Design Technology e.g. textiles once in Key Stage 1, once in Lower Key Stage 2 and once in Upper Key Stage 2. They will study Food and Nutrition annually. Therefore, knowledge and skills progression is split into these age ranges. This also ensures that there is a context for the children's work in Design and Technology; that they learn about real life structures and the purpose of specific examples, as well as developing their skills throughout the programme of study. Design and Technology lessons are also taught as a block so that children's learning is focused throughout each unit of work. We utlilise our community and specialists within our local area to enthuse children and ensure they see how Design Technology is used in their everyday lives.

DESIGN TECHNOLOGY IN EYFS

Why do we teach Design and Technology? Why do we teach it the way we do
Our Design and Technology curriculum gives our children technical and practical experiences to develop essential skills for life It enables our children to think creatively, solve problems and develop the skills needed to make finished products. In Reception, the children are actively encouraged to follow their own interests developing their own ideas. The children learn to express themselves and their own choices, developing the skills of evaluating and refining their own work.

What do we teach? What does this look like?
At our school, the children in Reception have access to continuous provision, which has high quality open-end resources. They are encouraged to plan and design what they would like to create and select the tools and resources they will need to support their choices. Highly trained practitioners support the children to learn a repertoire of skills and techniques. As well as the creative areas for junk modelling using recyclable materials in our setting the children also have access to small world and construction areas. These areas provide the children with problem-solving opportunities within Design and Technology so they can plan, design, build, evaluate and improve on their models. Throughout half termly topics such as Ourselves, Animals, Toys and Materials the children also explore different technology skills such as thinking creatively and solving problems.

What will this look like? By the time children leave our EYFS they will able to:

Physical Development

- Use a range of small tools, including scissors, paintbrushes and cutlery.

Expressive Arts & Design

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Share their creations, explaining the process they have used.

IMPLEMENTATION – Designers & Technologists

	Year A			Year B		
	Au 1	Sp 1	Su 1	Au 1	Sp 1	Su 1
Y1 & Y2	Qui Shi Huang (Great Wall of China)	Andy Warhol	Manufacturer: Little Chocolate Shop	Karl Benz	Steiff	Annabel Karmel
Y3	Adrian Smith (Burj Khalifa)	John Henry-Holmes	Manufacturer: Old Slenningford Farm	Henry Ford	Coco Chanel	Matilda Ramsay
Y4 & Y5	John Utzon (Sydney Opera House)	Alexander Graham Bell	Manufacturer: Pear Tree Honey	James Watt	Tom Ford	Jamie Oliver
Y6	Empire State Building	James Dyson	Manufacturer (Heck Sausages)	Archimedes	Donatella Versace	Nadiya Hussain
During the summer term of Year A, children should visit a manufacturing site / food preparation area such as the ones above.						

IMPLEMENTATION – Long Term Planning

	YEAR A			YEAR B		
	Autumn	Spring	Summer	Autumn	Spring	Summer
Aspect	Structures	KS1 – Mechanisms KS2 – Electrical	Cooking & Nutrition	Mechanisms	Textiles	Cooking & Nutrition
Reception	This will include opportunities to construct structures using a range of building tools in various sizes. Testing various different building apparatus – large and small. Joining, balancing, connecting.	This will include opportunities to discover various mechanisms within books, joining and testing ideas of movement and cause and effect within construction and expressive art areas. A range of materials will be available to explore and build these concepts.	This will include opportunities to grow and plant their own fruits and vegetables. Explore a range of non-fiction books to develop understanding of where food comes from.	This will include opportunities to discover various mechanisms within books, joining and testing ideas of movement and cause and effect within construction and expressive art areas. A range of materials will be available to explore and build these concepts.	This will include opportunities to explore and construct using various textures and materials, joining, cutting, sticking where children will be given scope to be creative, take risks, and develop trial and error/testing ideas by adjusting and evaluating. Opportunities to thread within funky finger activities.	This will include opportunities to grow and plant their own fruits and vegetables. Explore a range of non-fiction books to develop understanding of where food comes from.
Year 1/2	Windmills	Moving Monsters	Wraps	Wheels & Axels	Puppets	Smoothies
Year 3	Pavilions	Torches	Seasonal Tarts	Pneumatics – Moving Toys	Pouches	Seasonal Tarts
Year 4/5	Bridges	Doodlers	Pasta Bolognaise	Mechanical Cars	Cushions	Biscuits
Year 6	Playgrounds	Steady Hand Games	Come Dine with Me	Gears & Pulleys	Waistcoats	Come Dine with Me
Substantive Concepts	user, purpose, functionality, design decisions, innovation and authenticity					

IMPLEMENTATION – Progression in Skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Designing	Create a simple design for my product. Use pictures and words to describe what I want to do.	Design useful, pleasing products for myself and other users based on a design brief. Generate, develop, model and communicate my ideas through talking, drawing, templates, mock-ups, and ICT.	Use my knowledge of existing products to design functional and appealing products for a particular purpose or audience. Create designs using annotated sketches, cross-sectional diagrams, and simple computer programs.	Use my knowledge of existing products to design my own functional product. Create designs using exploded diagrams. Use my research into existing products and market research to inform the design of my own innovative product.	Generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, patterned pieces, and CAD.	Use research I have done into different designers and inventors to inform my designs. Create prototypes to show my own ideas.
Making	Select from and use a range of tools and equipment to perform practical tasks. Use a range of simple tools to cut, join and combine materials and components safely (e.g., paper clips, tape, different glues). Choose tools to use and select materials based on my knowledge of their properties.	Safely measure, mark out, cut and shape materials using a range of tools.	Safely measure, mark out, cut, assemble and join with some accuracy. Use techniques which require more accuracy to cut, shape, join, and finish my work.	Make suitable choices from a wide range of tools and unfamiliar materials and plan out the main stages of use. Use my knowledge of techniques and the functional and aesthetic qualities of a wide range of materials to plan how to use them.	Make careful and precise measurements so that joins, holes and openings are in exactly the right place. Apply my knowledge of materials and techniques to refine and rework my product to improve its functional properties and aesthetic qualities.	Produce step-by-step plans to guide my making, demonstrating that I can apply my knowledge of different materials, tools, and techniques. Use my technical knowledge and accurate skills to problem solve during the making process.
Evaluating	Make simple judgements about existing products and those that I have made. Suggest how a product could be improved.	Evaluate and assess existing products and those that I have made using a design criterion.	Investigate and analyse existing products and those I have made, considering a wide range of factors including who, where and when products were designed.	Consider how existing products and my own products might be improved and how they meet the needs of the intended user.	Make detailed evaluations, including eco credentials, about existing products and my own considering the views of others to improve my work.	Use my knowledge of famous designs to further explain the effectiveness of existing products and products that I have made.

Technical Knowledge	Build structures, exploring how they can be made stronger, stiffer and more stable. Explore and use mechanisms such as flaps, hinges, wheels, and axles in kit form. Explore, cut, join and make using different fabrics. Investigate different techniques for stiffening materials and stabilising structures. Understand how simple 3-D textile products are made, using a template to create two identical shapes.			Know how to make strong, stiff shell structures. Apply techniques I have learnt to strengthen structures and explore my own ideas. Understand how mechanical systems such as levers and linkages create movement. Understand and use electrical systems in my products. Know that a single fabric shape can be used to make a 3D textiles product.		Build more complex 3D structures and apply my knowledge of strengthening techniques to make them stronger or more stable. Use a wide range of methods to strengthen, stiffen and reinforce complex structures and use them accurately and appropriately. Understand how pulleys and gears create movement. Understand how to use more complex mechanical and electrical systems. Know that a 3D textiles product can be made from a combination of fabric shapes. Apply my understanding of computing to program, monitor and control my products.	
Food & Nutrition	Talk about what I eat at home and begin to discuss what healthy foods are. Know the importance of '5 a day' portions of fruit and veg. Say where food comes from and give examples of food that is grown. Understand the need for a variety of food in a diet. Use simple tools to help prepare food safely. • Understand the main food groups and the different nutrients that are important for health. • Understand how a variety of ingredients are grown,	Name and sort foods into the five groups of the 'Eatwell Plate'. Understand that all food has to be farmed, grown or caught. Use a wider range of cookery techniques to prepare food safely	Understand that food has to be farmed, grown or caught in Europe and the wider world. Talk about the different food groups and name food from each group. Understand what makes a healthy and balanced diet, and that different foods and drinks provide different substances the body needs to be healthy and active.	Understand seasonality and the advantages of eating seasonal and locally produced food. Use a wider variety of ingredients and techniques to prepare and combine ingredients safely. Read and follow recipes which involve several processes, skills and techniques.	Understand the main food groups and the different nutrients that are important for health. Understand how a variety of ingredients are grown, reared, caught and processed to make them safe and palatable. Select appropriate ingredients and use a wide range of techniques to combine them. Use information on food labels to inform choice. Confidently plan a series of healthy meals based on the principles of a varied and healthy diet.	Select appropriate ingredients and use a wide range of techniques to combine them. Use information on food labels to inform choice. •Confidently plan a series of healthy meals based on the principles of a varied and healthy diet.	Research, plan, prepare and cook a savoury dish, applying my knowledge of ingredients and my technical skills.

	reared, caught and processed to make them safe and palatable.						

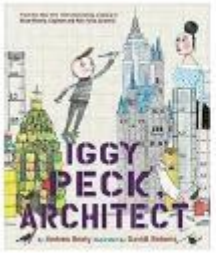
IMPLEMENTATION – Sticky Knowledge

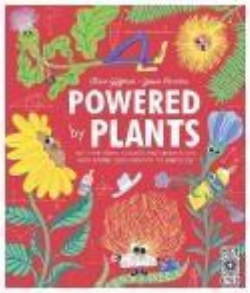
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Designing	To know that things that are made start with a design created by a designer.	To know that products are designed with a user in mind.	To identify the target market for a particular product.	Know how to design a product with a target market in mind.	Know and use technical vocabulary relevant to the project.	Know how much products cost to make Know how sustainable and innovative products are Know how to strengthen and stiffen designs.	
Making	Know how to use scissors to cut straight and curved edges To use basic adhesives to join materials. Know how to use a knife to chop safely. Know how to use a peeler.	To know that structures can be made stronger, stiffer and more stable and suggest ways in which this can be achieved. Know how to thread a needle. Know how to use a wider range of utensils (whisk / grater etc.) Know how to safely use a hacksaw to cut balsa wood. Know how to use a simple, straight stitch Know whether a fruit or vegetable is from the UK or imported.		Know how to safely use a hammer and nail. Know how to do a simple over locking stitch. Know how to use weighing scales to measure an ingredient accurately. Know which menu choices are healthy. Know how to safely use a hammer and nail. Understand the principle of weaving Know the principles of a balanced diet.		Know how to strengthen a structure using triangulation. Know how to make accurate measurements to ½ cm. Know how to add embellishments successfully. Know how and why they should eat healthily. Know to measure and cut fabric accurately. Know how we can reduce food waste. Know about the basic uses of key ingredients within a recipe (yeast, butter, sugar, flour, egg)	

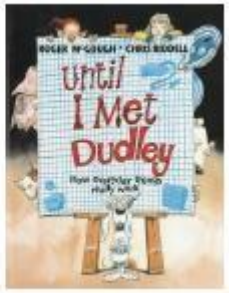
Evaluating	Know that evaluation means deciding how useful a product is.	Know how to make a simple evaluation.	Know that the outcome of an evaluation could change depending on the target audience.	Know adaptations can be made following an evaluation.	Know that products can be evaluated by the target audience, not just themselves. Know and take part in consumer groups in order to evaluate a product successfully.

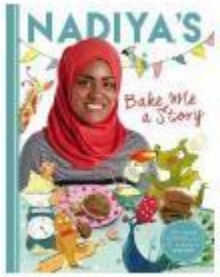
IMPLEMENTATION – Reading as Designers and Technologists…

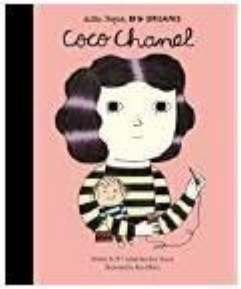
As Lifelong Readers, we want to inspire our children to 'read as designers and technologists'. We have a carefully planned and sequenced reading spine to further engage the children and provide them with high quality texts in line with their current unit of work in Design Technology. Please see a sample of our core texts for the subject attached.

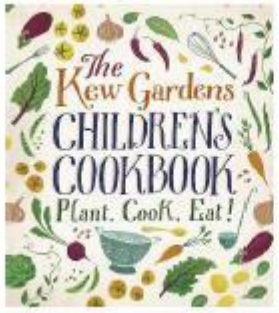


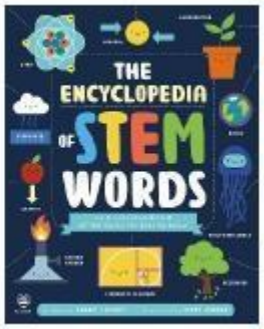












IMPACT- DESIGN TECHNOLOGY -

We ensure the children:

- 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 and 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. Children will design and make a range of products. A good quality finish will be expected in all design and activities made appropriate to the age and ability of the child

Children 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. Highquality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Our Design & Technology work is celebrated and assessed for impact through:

- Annual reporting to parents
- Use of the school assessment tracker
- Shared discussion with staff after ‘Project Days’
- Whole school displays
- Examples of the D&T process on social media and the school website
- Pupil questionnaires