Design & Technology

Moulton Chapel Primary School

1. *To be able to read, write and speak with confidence and fluency.*
2. *To be able to use mathematical concepts to tackle problems and resolve them.*
3. *To be global citizens that have had cultural experiences beyond their normal lives.*
4. *To aspire our children to dream big in their career path.*
5. *Grow into responsible, respectful young people who value each other.*

Intent

At Moulton Chapel, children receive a design and technology curriculum which allows them to exercise their creativity through designing and making. The children are taught to combine their designing and making skills with knowledge and understanding in order to design and make a product. Skills are taught progressively to ensure that all children are able to learn and practice in order to develop as they move through the school. Design and Technology allows children to apply the knowledge and skills learned in other subjects, particularly Maths, Science and Art. Children's interests are captured through topic learning, ensuring that links are made in a cross curricular way, giving children motivation and meaning for their learning. Children will learn basic cooking skills.

Implementation

We teach the National Curriculum, supported by a clear skills and knowledge progression. This ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children. DT is taught as part of our topic sessions

All teaching of Design & Technology should follow the ***design, make and evaluate*** *cycle. Each stage should be rooted in developing technical knowledge. The design process should be linked to real life, relevant contexts to give meaning to learning. While making, children should be given choice and a range of tools to choose from. To evaluate, children should be able to evaluate their own products against a design criteria. Each of these steps should be focused on developing technical knowledge and vocabulary. Design & Technology should be taught to a high standard, where each of the stages should be given equal weight.*

The key skills we teach the children are:

- *electrical and mechanical components*
- *using materials*
- *sewing and textiles*
- *cooking and nutrition*

Impact

Children will have clear enjoyment and confidence in design and technology that they will then are able to apply to other areas of the curriculum.

Children will ultimately know more, remember more and understand more about Design Technology, meeting age related expectations and demonstrating this knowledge when using tools or skills in other areas of the curriculum and in opportunities out of school.
As designers children will develop skills and attributes they can use beyond school and into adulthood.

Children in Foundation Stage are assessed within Expressive Arts and Design and their progress is tracked using Tapestry. Age related expectation levels are reported to all parents at the end of the year.

National Curriculum requirements:

EYFS requirements:

Physical Development - Moving and Handling

- *To handle equipment and tools effectively, including pencils for writing.*

Expressive Arts and Design - Exploring and Using Media and Materials

- *To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.*

Being Imaginative

- *To 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 technology, art, music, dance, role play and stories.*

KS1 NC requirements:

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*
- *explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.*

Cooking and nutrition:

- *use the basic principles of a healthy and varied diet to prepare dishes*
- *understand where food comes from.*

KS2 NC requirements:

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]*
- *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.*

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.*

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Progression through the school

		EYFS	Year 1 / 2
Design	**Research- uses and purpose**	• Use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Use what they have learnt about media and materials in original ways, thinking about uses and purposes.	• Gather information about the needs and wants of particular individuals and groups • Develop their own design criteria and use these to inform their ideas • Research designs to help explain the purpose of product, how it will work and how it will be suitable for the user
	Ideas / plan	• Have own ideas and plan what to do next • Explain what I want to do and describe how I may do it • Draw a simple picture of their design • Choose tools and materials / ingredients • Sort foods into healthy and unhealthy • Explain what I'm making and why	• Draw a labelled picture of what they want to make • Choose the materials / ingredients they are wanting to use • Create a list of materials /ingredients they will need for their product • Understand that the basic principles of a healthy and varied diet may be incorporated in their design • Explain what I am making and why it fits the purpose
Make	**Construction**	• consider what I need to do next • select tools/equipment to cut, shape, join • cut and shape, with support • choose suitable materials and explain choices • try to use finishing techniques to make product look good • work in a safe and hygienic manner	• Explore how to make structures stronger • make suggestions as to what I need to do next. • join materials/components together in different ways • measure, mark out, cut and shape materials and components, with support. • Use a simple mechanism in their product - levers, sliders, wheels and axles • describe which tools I'm using and why • choose suitable materials and explain choices depending on characteristics. • use finishing techniques to make product look good • work safely and hygienically
	Textiles	• Cut and join fabric carefully • Creating a design on fabric using pens/paint.	• Making/using simple paper pattern pieces. • Cutting fabric carefully • Learning sewing basics – threading a needle, knotting your thread, finishing off. • Sewing using running stitch, attempting to produce neat, equal stitches • Creating a design on fabric using applique. • Creating a design on fabric using pens/paint.
	Food	• Observe basic food hygiene procedures with support – washing hands; washing fruit/veg; cleaning surfaces before and after preparing food. • Peel fruit where necessary. • Use a knife and chopping board safely. • Serve food in an appealing way. • Clean/wash up after themselves. • Develop use of good food vocabulary	• Observe basic food hygiene procedures with support – washing hands; washing fruit/veg; keeping meat separate; cleaning surfaces before and after preparing food. • Use a knife and chopping board to neatly chop ingredients. • Use a spoon to add condiments. • Carefully roll up their wrap. • Serve food in an appealing way. • Clean/wash up after themselves • Develop use of good food vocabulary

Evaluate		• *Describe what they like/dislike about their product* • *Talk about what they would do differently if they were to do it again*	• *describe what went well, thinking about design criteria* • *talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion* • *evaluate how good existing products are* • *talk about what I would do differently if I were to do it again and why*

Design		***Year 3 / 4***	***Year 5 / 6***
	Research- uses and purpose	• *use research for design ideas* • *say how realistic plan is.* • *make and explain design decisions considering availability of resources*	• *draw on market research to inform design* • *use research of user's individual needs, wants, requirements for design* • *identify features of design that will appeal to the intended user* • *use computer-aided designs*
	Ideas / plan	• *show design meets a range of requirements and is fit for purpose* • *begin to create own design criteria* • *have at least one idea about how to create product and suggest improvements for design.* • *produce a plan and explain it to others* • *include an annotated sketch* • *make a prototype and explain how product will work*	• *create own design criteria and specification* • *come up with innovative design ideas* • *follow and refine a logical plan.* • *use annotated sketches, cross-sectional planning and exploded diagrams* • *make design decisions, considering, resources and cost* • *clearly explain how parts of design will work, and how they are fit for purpose* • *independently model and refine design ideas by making prototypes and using pattern pieces*
Make	***Construction***	• *measure carefully to avoid mistakes* • *attempt to make product strong* • *continue working on product even if original didn't work* • *make a strong, stiff structure* • *select most appropriate tools / techniques* • *explain alterations to product after checking it* • *grow in confidence about trying new / different ideas.* • *use levers and linkages to create movement* • *use pneumatics to create movement* • *use number of components in circuit* • *program a computer to control product*	• *select materials carefully, considering intended use of the product, the aesthetics and functionality.* • *explain how product meets design criteria* • *reinforce and strengthen a 3D structure or product* • *refine product after testing, considering aesthetics, functionality and purpose* • *incorporate hydraulics and pneumatics* • *be confident to try new / different ideas* • *use cams, pulleys and gears to create movement* • *use different types of circuit in product* • *think of ways in which adding a circuit would improve product* • *program a computer to monitor changes in environment and control product*
	Textiles	• *think about user when choosing textiles* • *think about how to make product strong* • *begin to devise a template* • *explain how to join things in a different way* • *understand that a simple fabric shape can be used to make a 3D textiles project*	• *think about user's wants/needs and aesthetics when choosing textiles* • *make product attractive and strong* • *make a prototype* • *use a range of joining techniques* • *think about how product might be sold* • *think carefully about what would improve product* • *understand that a single 3D textiles project can be made from a combination of fabric shapes.*
	Food	• *explain how to be safe/hygienic* • *think about presenting product in interesting/ attractive ways* • *understand ingredients can be fresh, pre-cooked or processed* • *begin to understand about food being grown, reared or caught in the UK or wider world* • *describe eat well plate and how we need a healthy diet, variety / balance of food*	• *understand a recipe can be adapted by adding / substituting ingredients* • *explain seasonality of foods* • *present product to a high standard to make the product interesting and aesthetically attractive* • *learn about food processing methods* • *name some types of food that are grown, reared or caught in the UK or wider world* • *adapt recipes to change appearance, taste, texture or aroma.*

		and drinks • *explain importance of food and drink for active, healthy bodies* • *prepare and cook some dishes safely and hygienically* • *use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading and baking*	• *describe some of the different substances in food and drink, and how they can affect health* • *prepare and cook a variety of dishes safely and hygienically including, where appropriate, the use of heat source.* • *use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.*
Evaluate		• *refer to design criteria while designing and making* • *use criteria to evaluate product* • *begin to explain how I could improve original design* • *evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose* • *discuss by whom, when and where products were designed* • *research whether products can be recycled or reused* • *know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products*	• *evaluate quality of design while designing and making; is it fit for purpose?* • *keep checking design is best it can be.* • *evaluate ideas and finished product against specification, stating if it's fit for purpose* • *test and evaluate final product; explain what would improve it and the effect different resources may have had* • *do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose* • *evaluate how much products cost to make and how innovative they are* • *research and discuss how sustainable materials are* • *consider the impact of products beyond their intended purpose* • *discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products*

Whole School Overview – all school follow design, make, evaluate model of teaching

Year	Autumn 1	Autumn2	Spring 1	Spring 2	Summer 1	Summer 2
R / Y1/Y2 A	*Food*			*Construction – wheels and axels Vehicle*	*Construction – levers Animal homes*	
R / Y1/Y2 B		*Food*				*Textiles*
R / Y1/Y2 C	*Construction - lever sun and moon*		*Construction- slider Travelling emergency vehicle*		*Construction –hinge and levers dinosaur*	
Year 3 / 4 A				*Construction - levers and linkages Snapping crocodile*		*Construction - electrical circuits Lighthouse*
Year 3 / 4 B	*Food*			*Textiles (linked to Art & design)*	*Construction – pulleys Viking sail boat*	
Year 5 / 6 A		*Construction- electrical circuits Design a secret annexe/shelter*		*Construction – gears Progression of tools*	*Food* →	→
Year 5/ 6 B		*Textiles*		*Construction – cams and pulleys shaduf*		*Textiles*

Design & Technology vocabulary – subject specific vocabulary (language you want the children to use and know the definition of)

Year 1 & 2

Making, construction and structure	Textiles	Cooking and Nutrition
investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder	*stitch, fabric, material, thread, cotton, needle, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish*	*fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients*

Year 3 & 4

Making, construction and structure	Textiles	Cooking and Nutrition
evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations, shell structure, three dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision	*Running stitch, back stitch, over stitch, fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance*	*name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet*

Year 5 & 6

Making, construction and structure	Textiles	Cooking and Nutrition

function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent	*seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings*	*ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble*