CURRICULUM DESIGN for DESIGN & TECHNOLOGY

Curriculum Intent

Design and Technology INTENT

At Mosaic, our Design and Technology curriculum offers children the chance to use creative thinking and design. The curriculum has a defined purpose and tangible outcomes. Skills are taught progressively through an annual cycle of three Design Technology elements: mechanisms and mechanical structures, food and nutrition and textiles. These ensure that all children are able to develop their designing, making, evaluating and technical skills; these are progressive (disciplinary knowledge) and are vital skills for children to develop in our rapidly changing world. Purposeful links have been made to other curriculum areas, including mathematics, science, art and computing.

Design and Technology IMPLEMENTATION

Our Design technology scheme of work follows the National Curriculum; objectives are delivered through long and short enquiries. Children are 'hooked' into their learning before working through an enquiry-based approach. The voices (which form our disciplinary knowledge) ensure skills specific to Design and Technology are taught each and every year. The curriculum makes use of prior knowledge and provides clear references on how learning will be used in future enquiries. At the end of the enquiry, a high-quality 'outcome' is shared with parents and/or the school community. We assess the impact of the enquiry through SLT reviews: The Head of School meets with children and questions them on their learning and determines the depth of their knowledge as well as their reflections on the core values that they were working on. Kahoot quizzes are also conducted at the beginning and end of the enquiry.

For those children that show a particular enthusiasm for the subject, they have the opportunity to become a 'Graduate.' Our Graduation scheme gives children the chance to explore learning beyond the National curriculum. This scheme focuses on Inspirational and Influential people within Design and Technology.

Design and Technology IMPACT

Impact of teaching and learning will be determined through SLT reviews and Self- evaluation sheets. This information will be collated in Scholarpack document. We will know we have been successful if children have met their 'end points' which are specified in the planning document.

Progression of Knowledge

Our Design Technology curriculum for KS1-KS2 follows three main themes of Mechanisms and Mechanical Structures, Cooking and Nutrition and Textiles. Children work through a consistent process of: design, make and evaluate. There is an expectation that children will use their prior learning and build upon this as they journey through Eden Park. Children will reach an **end point** where their understanding of art has been strengthened and deepened through this purposefully mapped out curriculum.

In Early Years, children would encounter Design Technology through 'Expressive Art and Design'. Here children would have had plenty of opportunities to explore different materials and mediums through their continuous provision activities. **Joining and assembling**: They will use cold glue guns and tape to join and assemble materials with a purpose in mind when joining materials. Children can fold paper and card to create the desired effect e.g. paper plane. **Construction:** Children create complex structures becoming more imaginative in their block play and begin to create elaborate and complex designs, using their understanding of pattern, shape and balance. Children will start to use blocks to represent things that they know, that in turn enhance their play, for example a car or an animal, house or train station. Daily snack time provides a perfect opportunity to consider healthy food choices and further opportunities to learn about food and nutrition are offered throughout the year. Continuous provision provides plenty of opportunities to practise and explore joining, making, using tools and creating using different materials and evaluation is always encouraged. These foundations are built upon as children journey through Year 1 and KS1.

<table>
<tr><th></th><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th><th>Year 5</th><th>Year 6</th></tr>
<tr><td>Enquiry 1</td><td>Mechanisms and Mechanical systems/structures</td><td>Mechanisms and Mechanical systems/structures</td><td>Mechanisms and Mechanical systems/structures</td><td>Mechanisms and Mechanical systems/structures</td><td>Mechanisms and Mechanical systems/structures</td><td>Mechanisms and Mechanical systems/structures</td></tr>
<tr><td>Enquiry 2</td><td>Cooking and Nutrition</td><td>Cooking and Nutrition</td><td>Cooking and Nutrition</td><td>Cooking and Nutrition</td><td>Cooking and Nutrition</td><td>Cooking and Nutrition</td></tr>
<tr><td>Enquiry 3</td><td>Textiles</td><td>Textiles</td><td>Textiles</td><td>Textiles</td><td>Textiles</td><td>Textiles</td></tr>
<tr><td>End point:</td><td colspan="2">By the end of Key Stage 1, children will:

Mechanisms and mechanical systems/structures
✓ Have an understanding of levers, pivots, wheels and axis.
✓ Be able to attach mechanisms to simple components.
✓ Be able to cut a slot
✓ Be able to join materials

Cooking and Nutrition
✓ Know about healthy food and what makes up a balanced diet
✓ Have an awareness of food hygiene
✓ Know that food is seasonal</td><td colspan="4">By the end of Key Stage 2, children will build on their prior knowledge of the past and extend this further. Children will:

Mechanisms and mechanical systems/structures
✓ Be able to use electrical circuits to power products.
✓ Be able to use IT to support the 'making' process.
✓ Have an understanding of cams, and linkages
✓ Begin to identify problems in the design process and solve them independently.

Cooking and Nutrition
✓ Have worked with a range of food ingredients, including fish, chicken, beef, fruit and vegetables.
✓ Be able to supplement basic foods such as bread with additional ingredients
✓ Have an understanding of the food pyramid
✓ Have some understanding of the history of food in western markets and the influence of other cultures.

Textiles</td></tr>
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	Textiles ✓ Use basic running stitch and over stitch ✓ Cut with scissors with reasonable accuracy ✓ Consider design criteria **Children will be able to evaluate their own products against a design criteria**	✓ Know about the environmental impact of using materials ✓ Know a wide range of stitches ✓ Plan, make templates, patterns and prototypes **Children will evaluate their own products against design criteria and consider the views of others.**

The Voices of Design Technology (Disciplinary knowledge)

Woven through our D&T curriculum are our 'Voices'. It is our intention that the voices are used, where appropriate, during D&T teaching. Children will therefore encounter these 'Voices' repeatedly throughout their time at Eden Park. They will use their prior knowledge of a specific 'voice', such as "Evaluate" and build upon this in their Learning Enquiries. The 'Voices' are progressive.

	Design Build knowledge, understanding and skills in order to design products		Make Build knowledge, understanding and skills in order to make prototypes and products		Evaluate Critique, evaluate and test ideas and products		**Technical Skills** Develop the creative, technical, and practical expertise
EYFS	✓ Design models for a purpose ✓ Communicate ideas through talking	**EYFS**	✓ *Refines previous knowledge on joining materials and artistic effects – cold glue guns, paper clips, split pins, & hole punch with treasury tags* ✓ Understanding and making shapes of places and objects that they know.	**EYFS**	✓ *Can express their ideas and feelings about their experiences.* ✓ Offering explanations for why things their creation is successful or not	**EYFS**	✓ Join materials with a purpose in mind ✓ Make suitable choices of what to use when joining materials. ✓ Cutting food using correct tools and techniques
Key stage 1	✓ Design purposeful, functional and appealing products based on simple criteria. ✓ Communicate ideas through talking, drawing and prototypes. ✓ Use principles of healthy diet to design dishes.	**Key stage 1**	✓ Select the correct from tools and equipment for practical tasks. ✓ Select the correct materials and components according to their characteristics. ✓ Use principles of healthy diet to make dishes.	**Key stage 1**	✓ Explore and evaluate existing products ✓ Evaluate their own products against design criteria.	**Key stage 1**	✓ Explore their own structures for how they can be made stronger, stiffer and more stable. ✓ Explore mechanisms, such as levers, sliders, wheels and axles. ✓ Understand where food comes from.
Year 3 / 4	✓ Generate ideas for design by collecting some information. ✓ Create criteria for the design to be fit for purpose. ✓ Communicate their ideas through talk and annotated sketches. ✓ Understand the importance of kitchen safety and hygiene.	**Year 3 / 4**	✓ Make products to fit design criteria as neatly as possible. ✓ Select and justify material and component choices according to their characteristics. ✓ Use tools with increasing precision. ✓ Measure food stuffs accurately using scales.	**Year 3 / 4**	✓ Analyse and evaluate existing products and compare these with their own design. ✓ Evaluate their own products against design criteria. ✓ Identify problems to their design and consider ways of solving it.	**Year 3 / 4**	✓ Finish a product to high quality. ✓ Understand simple electrical circuits to include buzzers and motors. ✓ Use mechanical systems in their products e.g. gears, pulleys, cams and levers and linkages. ✓
Year 5 / 6	✓ Use research and develop design criteria to inform the design. ✓ Communicate their ideas through talk, annotated sketches, cross-sectional diagrams and prototypes. ✓ Understand and apply the principles of a healthy and varied diet.	**Year 5 / 6**	✓ Select from a wide range of tools and equipment to perform practical tasks accurately. ✓ Select from a wide range of materials according to both their function and aesthetics. ✓ Use precise measurements for joints and functionality. ✓ Prepare and cook a range of dishes using different techniques. ✓ Understand that meals contain various food types which have different impacts on the human body.	**Year 5 / 6**	✓ Investigate and analyse existing products. ✓ Evaluate their own products against design criteria and consider the views of others. ✓ Understand hope design and technology has shapes the world. ✓ Solve problems as they happen. ✓ Understand food seasonality and how food is produced.	**Year 5/ 6**	✓ Communicate their ideas through talk, annotated sketches, cross-sectional diagrams, prototypes and computer aided design (CAD) ✓ Consider the aesthetic impact of the provide i.e. hiding joints or using colours for aesthetic effects so that they appeal to users. ✓ Strength, stiffen and reinforce more complex structures. ✓ Use mechanical systems in their products e.g. gears, pulleys, cams and levers and linkages. ✓ Use and understand electrical systems in their products. ✓ Apply their understanding of computing to program, monitor and control their products.

	YEAR 1			YEAR 2		
	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an interactive process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].					
Theme	Mechanisms and Mechanical systems/structures	Cooking and Nutrition	Textiles	Mechanisms and Mechanical systems/structures	Cooking and Nutrition	Textiles
Enquiry	**Enquiry 1** **Paper Toys** Sliders, levers, pivot and wheel mechanisms	**Enquiry 2** **Eat more fruit and vegetables(6 lessons)**	**Enquiry 3** **Delightful decorations (6 lessons)**	**Enquiry 1** **Vehicles/fire engine (6 lessons)** Wheels, axles, chassis & bodywork	**Enquiry 2** **Seaside snacks (6 lessons)**	**Enquiry 3** **English Rose (6 lessons)**
Scheme of work Substantiative Knowledge	Paper toys, enquiry 1 YEAR 1	Fruit / Vegetable salad enquiry 2 YEAR 1	Delightful Decorations, enquiry 3 YEAR 1	Making fire engines, enquiry 1 YEAR 2	Seaside snacks, enquiry 2 YEAR 2	English Rose 3 YEAR 2
	Specific, individual lesson plans and resources can be found on CURRICULUM – D.T –PLANNING. Each lesson is individually planned and differentiated and consider assessment opportunities. Opportunities to link the specific content to the calendar, our local community and other cross curricular links need to be made.					
Further considerations	• Make links with science and literacy (Oi Frog!). • Use of outdoor learning spaces • Storytime sessions should have books with moving parks such as Dear Zoo and the Jolly Postman.	• Ensure children have the opportunity to make some of the food discussed and provide purposeful opportunities for the picnic.	• This unit needs to happen at Christmas and consider provision for children that do not celebrate Christmas	• Make links with Brixham Fire Brigade. Visit the new fire station in town and look at the features of the fire engine. Receive a talk on fire safety. • Could tie this enquiry into when the fire engine visits EP (Nursery). • This enquiry can be based on any vehicle.	• The school pizza oven should be used to make the pizzas. • Locally source the ingredients for the pizza e.g. home grown tomatoes.	• This enquiry will be best delivered alongside the Art enquiry on collage and quilting since many of the skills are replicated.
Sequencing knowledge	**Prior knowledge:** children used different materials to create objects. They use	**Prior knowledge**: through snack time, children would already have an awareness of healthy eating i.e. fruit and	**Prior knowledge**: children would have had plenty of opportunities in 'Expressive Arts and Design' to cut and join materials. They will also	**Prior knowledge**: use knowledge from Paper Moving Toys (ref. Y1, enquiry 1).	**Prior knowledge**: Apply knowledge of healthy and balanced diets.	**Prior knowledge**: sewing in Y1 with Puppets. Children would also have experienced safe cutting

	split pins to join two parts together. Children in EYFS will have made their own story boxes to include designing characters and settings using different materials. They would have extensive experience of story books with moving parts and other interactive features. Finger gym provides excellent prior learning as fine motor skills are practised daily. **Future knowledge**: move beyond levers and pivots to introducing linkages ref Y4 enquiry 1). Levers. Knowledge on pivots will be used when considering how to attach a ladder in Fire Engines (ref. Y2, enquiry 1).	vegetables. They are expected to peel and cut their fruit as necessary. During their learning in Rrecepetio' children discuss healthy and unhealthy foods and in their learning on 'Get, Set, Grow' children learn about the conditions for growing food and begin to think about the nutrients we need from food, such as vegetables. **Future knowledge:** understand food groups and start to create a balanced meal (ref. Y2, enquiry 2).	have had some experience of threading using large needles. **Future knowledge:** use knowledge of running stitch and cutting for Y2 art textiles and collage and textiles DT enquiry. Further stitches will be introduced in Y4 Sugar skulls(back stitches and whip stitches).	**Future knowledge:** Cams are introduced and a consideration of the shape of the cam to impact on moving (ref Y5).	**Future knowledge:** children will create their own bread and add ingredients to them (ref. Y5, enquiry 2)	and use of a needle and thread. **Future knowledge:** sewing skills will continue to develop during the forthcoming textiles enquires. The complexity of the stitch increases as children move through the years.
Tier 2 and Tier 3 vocabulary	Design, make, shape, stiffen, strengthen, rigid, material, evaluate	Cut, chop, slice, grate, stir, mix, recipe, ingredients, diet, healthy	Design, make, sew, stitch, material, fabric, needle, thread, evaluate	Design, make, chassis, wheels, axels, saw, materials, bodywork	Cut, chop, slice, dough, rise, cook, recipe, balanced diet, healthy, food groups, fruit, vegetables, vitamins, minerals, fibre, hygiene	Materials, tools, fabric, running stitch, template, evaluate
Relevant texts	I love bugs – Emma Dodd The Slime book (instructional)	Don't spill the milk – Stephen Davies and Christopher Corr Dino-dinners – Mick Manning How to catch Santa (instruction text)		Transport – Ruth Thompson The Slime book (instructional)	The disgusting sandwich – Gareth Edwards How to dress up as a book character (instructions)	How to dress up as a book character (instructions)

	YEAR 3			YEAR 4		
	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an interactive process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].					
Theme	Mechanisms and Mechanical systems/structures	Cooking and Nutrition	Textiles	Mechanisms and Mechanical systems/structures	Cooking and Nutrition	Textiles
Enquiry	**Enquiry 1** **Moving Monsters (6 lessons)** pneumatics	**Enquiry 2** **Sandwich Snack (2 lessons)**	**Enquiry 3** **The invention of the needle(2 lessons)**	**Enquiry 1** **Circuit Games(3lessons)** Electric circuit/ buzzer, turbine	**Enquiry 2** **Seasonal Food (6 lessons)**	**Enquiry 3** **Sugar Skulls(5 lessons)**
Scheme of work	Moving Monsters, enquiry 1 YEAR 3	Sandwich Snack , enquiry 2 YEAR 3	Creating a needle pouch Year 3	Circuit Game, enquiry 1 YEAR 4	Seasonal Food, enquiry 2 YEAR 4	Sugar Skulls , enquiry 3 YEAR 4
	Specific, individual lesson plans and resources can be found on Curriculum– D.T – Planning. Each lesson is individually planned and differentiated and consider assessment opportunities. Opportunities to link the specific content to the calendar, our local community and other cross curricular links need to be made.					
Further considerations	• Make some purposeful links to the EP Independence framework	• Make links to diet and their types of sandwiches	• Childern who present very good swing skills can make a replica of prehistoric shoe	• Expose children to a greater range of different boardgames	Children should: • Make use of the school groups to grow some seasonal vegetables and herbs. Make links with Occombe Farm. • Visit the fish market and create a fish based meal e.g. fishcakes and garnish with parsley which should be grown at school. Possible meal tasting at Rockfish, Brixham	

Sequencing knowledge	**Prior knowledge:** apply their knowledge of how to make objects move – levers, pivots and wheels in Y1 and in Y2 they have looked at wheels and axles. **Future knowledge**: continue to build	**Prior knowledge**: children will have an understanding of a balanced diet and the 5 main food groups (ref. Y2, enquiry 2). **Future knowledge:** continue to source seasonal vegetables in all food units.	**Prior knowledge**: cutting, running stitch, over stitch and apply knowledge of joining fabric. **Future knowledge:** continue in Y5 to consider functional and aesthetic features of a design (ref Y5 textiles). Children will also learn how	**Prior knowledge**: Moving paper puppets (ref. Y1 enquiry 1) children first explored levers and pivots here. **Future knowledge:** pivots used for rotating 2D objects is extended in Fairgrounds (ref. Y6	**Prior knowledge**: develop knowledge from seasonal food towards an understanding of longer term storage of foods such as tinned, drying and smoking.	**Prior knowledge**: children will have experienced cutting, attaching buttons and running stitch, all of which could be used in this enquiry. **Future knowledge:** use back switch and whip stitch in Y5 and Y6
	independence towards solving problems met at a design stage. Know how to make alterations to enhance the design.		to shape a fold and 'bag-out'.	enquiry 1) by attaching a rotating axle using electricity.	**Future knowledge:** children will use their knowledge of American foods when learning about burgers (ref. Y6 enquiry 2).	
Tier 2 and Tier 3 vocabulary	Pneumatic system, syringe, pan, design, make, evaluate, movement, air objects	Plan, design, make, evaluate, seasonality, harvested, produce, meat, poultry, proteins, fish, UK seafood, northern hemisphere, southern hemisphere, climate, imported	Plan, design, make, evaluate, stitches, materials, techniques, products, fabric, function, joins, decorations, visual appeal, suitability, decorative features, texture, embodied, applique, design criteria, template	Plan, design, make, evaluate, links and levers, mechanisms, plotting and planning, moving parts, pivot, rotate, linkage, lever, skills, techniques: stripes, crosshatching, dots and patterns, materials, flap, concertina	Plan, design, make, evaluate, soul food, Tex – Mex, fast food, staple foods, plentiful, affordable, filling, ingredients, convenience	Plan, design, make, evaluate, material, cut, pattern, running stitch, back stitch, whip stitch, techniques, embellishments, colours, applique, picture, join, finish
Relevant texts	Until I met Dudley – Roger McGough	Grow your own lettuce – Helen Lanz		Story Path – Kate Baker	Poetry Pie -Roger McGough	

	YEAR 5			YEAR 6		
	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an interactive process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].					
Theme	Mechanisms and Mechanical systems/structures	Cooking and Nutrition	Textiles	Mechanisms and Mechanical systems/structures	Cooking and Nutrition	Textiles
Enquiry	**Enquiry 1** Building Bridges **(6 Lessons)** Sturdy structures	**Enquiry 2** **Bread (6 lessons)**	**Enquiry 3** **Phone case (6 lessons)**	**Enquiry 1** **Fariground (4 lessons)**	**Enquiry 2** **World Word II Rations (2 lessons)**	**Enquiry 3** **Fashion and Textiles (6 lessons)**
Scheme of work	Building Bridges, enquiry 1 YEAR 5	Bread, enquiry 2 YEAR 5	Phone case, enquiry 3 YEAR 5	Fairground, enquiry 1 YEAR 6	World War II dish , enquiry 2 YEAR 6	Drawstring Bag, enquiry 3 YEAR 6
	Specific, individual lesson plans and resources can be found on CURRICULUM –D.T– PLANNING. Each lesson is individually planned and differentiated and consider assessment opportunities. Opportunities to link the specific content to the calendar, our local community and other cross curricular links need to be made.					
Further considerations	• Visit Putney to see the structure of a bridge.	• Visit a bakery to see how bread is made. • Careful consideration needs to be given to the alterations to the bread recipe to ensure children are given opportunity to taste food they might usually taste such as olives, garlic, seeds.		• Links to be made with Computing (control processing). • Links to be made with Science with electricity and forces.	• Use scales, Create ration coupons • Make links with a local food vlogger (parent to the school) to support advertising and promotion. This learning links with our computing curriculum.	• Consider environmental impact of the clothing industry, including carbon footprint of items of shipped clothing. Talk about conditions within 3rd world factories. • Consider linking up with a charity to link up with a clothes bank (Salvation Army).

Sequencing knowledge	**Prior knowledge:** use evaluation skills from Y4 to ensure the object meets the design specification. (ref Y4 enquiry 1). **Future knowledge**: continue to strengthen structures in efficient ways	**Prior knowledge**: (ref Y2, enquiry2, Seaside Snacks) **Future knowledge:** knowledge from bread	**Prior knowledge**: apply knowledge of back stitch, whip stitch, running stitch and over stitch (Y1 &Y4). **Future knowledge:** making templates and prototypes to fulfil a design criteria.	**Prior knowledge**: children have already experienced using pivots and rotating objects and this will be used here (ref Y4 enquiry 1). (ref Y5 B) building Bridges children first reinforced	**Prior knowledge**: use knowledge from American Food to understand the origins of burgers (ref. Y4 enquiry 2). Use knowledge from Bread	**Prior knowledge**: children will have had experienced of using zig zag and blanket stitch (Y5). **Future knowledge:** children will work with an increasing range of components. They will
	– using box joints (ref Y6 fairgrounds).	could be used in World War II dish (ref Y6, enquiry 2) to make informed choices about their choice of meal.	Children can apply the environmental impact learned in this enquiry when making slippers.	their structures using card and layering. **Future knowledge:** KS3 curriculum requires children to develop specifications to inform the design. Children will be able to apply their prior knowledge of making designs look appealing as they continue through KS3. Design, plan, make, evaluate, components, mechanism, motor, frames, structures, electrical circuit, rotating, belt and pulley, system, axle, reinforce, sturdier, finishing, control	(ref Y5 enquiry 2) when making bap choices. **Future knowledge:** make informed dietary choices in order to lead a healthy life.	also experience working an in industrial context (KS3 curriculum).
Tier 2 and Tier 3 vocabulary	Design, make, evaluate, cam mechanisms, cam shapes, structure, mechanical toys, linkage systems, rotary movement, linear movement, simple framework, triangular reinforcement, sturdy	Design, make, plan, evaluate, dough, knead, rise, prove, yeast, carbohydrates, vitamins, iron, fibre, digestive system, twist, finishes, wholemeal, granary, purpose, hygiene, food preparation	Design, plan, make, evaluate, material, pattern, joining techniques, decorative sewing skills, fastenings, fabric, joining stitches, hidden, visible, aesthetic features, applique, advantages, disadvantages, making process, product	Design, plan, make, evaluate, components, mechanism, motors, frames, structures, electrical circuit, axel, reinforce, sturdier, finishing, control	Design, plan, make, evaluate, nutrition, calories, pan fried, shallow pan, oven baked, barbecued, steamed, cuisine,	Design, plan, make, evaluate, patterns, sewing skills, functional, decorative, back stitch, fabric, template, pattern, seam allowance, finished product, high quality, technique,

Relevant texts	Chitty Chitty bang bang and the race against time – Frank Boyce	Incredible Edibles – Stefan Gates	Ripley's Mighty Machines – Robert L. Ripley	Chitty Chitty bang bang and the race against time – Frank Boyce	Incredible Edibles – Stefan Gates	Ripley's Mighty Machines – Robert L. Ripley Stuff You Should Know! – John Farndon Wallace & Gromit: Cracking Contraptions Manual – Derek Smith