DESIGN AND TECHNOLOGY POLICY

Introduction

Design and Technology prepares children to take part in the development of today's rapidly changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become independent and creative problem-solvers, both as individuals and as part of a team. It enables them to identify needs and opportunities and to respond by developing ideas and eventually making products and systems.

At Meadow Farm we ensure that the planned activities our children undertake are challenging, motivating, relevant and enjoyable. We give children confidence in their work by providing continual support and encouragement. The children are extended in their work in a ways in which develops their expertise.

Curriculum Intent

Our intent is prepare pupils to participate in tomorrow's rapidly changing technologies and to;

1. To provide opportunities for all the children to design and make quality products.
2. To provide children with the opportunity to explore food and cooking techniques along with healthy eating and environmental issues within food production.
3. To develop design and making skills, knowledge and understanding to the best of each child's ability; using and selecting a range of tool, materials and components.
4. To become creative problem solvers as individuals and members of a team.
5. To be able to use computing in conjunction with the Designing and Making process.
6. To develop an ability to criticise constructively and evaluate their own products and those of others.
7. To help the children develop an understanding of the ways people in the past and present have used design to meet their needs.
8. To reflect on and evaluate such techniques, its uses and effects.

To prepare the children for living in a multi-cultural society by teaching consideration for other culture which will be both important and beneficial.

Implementation of policy

Design and Technology is split into 4 areas of learning (listed below), in order to meet requirements of the National Curriculum it is essential that each teacher carries out at least 3 of the following Design Technology areas.

- Mechanisms
- Textiles
- Food
- Structures

There is an addition of 'electronics' in KS2.

By the end of year 6, children will have covered all areas of Design and Technology in great depth. We follow a clear progression of skills of creating, making and evaluating and Technical Knowledge in all areas covered in Design and technology (See appendix 1-5).

The Foundation Stage

The different aspects of the design and technology are incorporated within Creative Development in the Foundation Stage Curriculum. However, elements can also be found in other areas of learning (Physical development and Mathematics). This curriculum lends itself to an integrated approach to learning. Nursery and Reception teachers plan quality learning opportunities for Design and technology using the Early Years Curriculum. There is an emphasis on independence and self-initiated learning, which enables foundation stage children to freely explore resources and pursue their own creative interests and talents in addition to the planned learning experiences.

In the Early Years Foundation Stage, Design and Technology is an integral part of topic work, relating aspects of the children's work to the objectives set out in the Early Learning Goals, and Expressive Arts and Design. To facilitate our objectives different teaching styles and methods are used as appropriate. These include small group and individual work.

Teaching and Learning

We try and use skills based cross-curricular approach to teaching and learning using objectives taken from the National Curriculum. Design and Technology is taught discretely and through cross-circular links.

Designing, Making and Evaluating approach is taken during the planning for each unit of work. Clear progression of skills can be seen in the skills of Designing, Making and Evaluating and within the 5 areas listed above in each year group.

Design and Technology is a foundation subject in the National Curriculum. Our school uses Kapow Learning Scheme which is based on the National Curriculum objectives. Our medium-term plans, which we adopted from the Kapow Learning Scheme, gives details of each unit of work for each term. Learning objectives and

outcomes for each unit are identified ensuring appropriate balance and distribution of work across each term.

Impact

Pupils will learn a wide range of Design Technology skills, from cooking and nutrition, to designing and making. These skills are integral life skills that will provide a basis for the real world. Children will be competent at designing and assessing each other's work and skills, creating children who are confident self and peer-evaluators.

Pupils will also 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. Learning of Design and Technology will make an essential contribution to the creativity, culture, wealth and well-being of our nation.

Assessment

Assessing a child's performance is a continuous process and our assessing methods include the following as appropriate:

- Looking at a child's recorded work in their Design & Technology books i.e. model, photographs, written work.
- Individual discussion.
- Listening to the children's ideas as they discuss between themselves.
- Group discussions in both planning and reporting back sessions.
- Observing the children's skills in Design and Technology.
- Recording the progress that children make by assessing the children's work against the learning objectives for their lessons.

At the end of a unit of work, teachers make a judgement against the Key Learning Skills.

Planning and Resources

To meet the requirements of the National Curriculum it is essential that each teacher carries out at least 3 of the following Design Technology areas and the area that has not been taught is taught the following year:

- Mechanisms
- Textiles
- Food
- Structures
- Electronics (KS2 only)

Most of the Design and Technology supplies/resources are stored in the storage cupboards outside Year 3 and 4. It is important to ensure that resources are labelled, tidy and clean and ready for use.

Children will also use Secondary resources such as the internet; an invaluable resource to research and find out more about the impact of Design and Technology on the world.

Safety in Design and Technology

The safety of the children is the responsibility of the class teacher. The children are made aware of the safe use and correct procedure involved when using tools and equipment in a learning environment and how to follow proper procedures for food safety and hygiene. The children are made aware of the need to be careful and to understand that their actions can affect others. The children build up a range of skills when using equipment to reduce unnecessary risk.

Monitoring and Review

The monitoring of the standards of children's work and of the quality of teaching and learning is the responsibility of class teachers and the subject leaders. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in Design and Technology and providing a strategic lead and direction for this subject within the school.

Policy reviewed by: Megan Talbot, Design and Technology leader

Date prepared: 04th December 2023

Date ratified by the Strategic Committee:

Signed: 10.07.24
Mrs M Gaiderman

(Head Teacher)

Signed: S Eyre
Mrs S Eyre 10.07.24

Review date: December 2027

Appendices

Appendix 1 – Food and Nutrition

Progression in Food and Nutrition						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	N/A	• Designing a healthy wrap based on a food combination which work well together	• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish		• Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients • Writing an amended method for a recipe to incorporate the relevant changes to ingredients • Designing appealing packaging to reflect a recipe	• Writing a recipe, explaining the key steps, method and ingredients • Including facts and drawings from research undertaken
Make	• Chopping fruit and vegetables safely to make a smoothie • Identifying if a food is a fruit or a vegetable • Learning where and how fruits and vegetables grow	• Slicing food safely using the bridge or claw grip • Constructing a wrap that meets a design brief	• Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination • Following the instructions within a recipe		Cutting and preparing vegetables safely • Using equipment safely, including knives, hot pans and hobs • Knowing how to avoid cross contamination • Following a step by step method carefully to make a recipe	Following a recipe, including using the correct quantities of each ingredient • Adapting a recipe based on research • Working to a given timescale • Working safely and hygienically with
Evaluate	• Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be included on packaging	• 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 which grip was m	Establishing and using design criteria to help test and review dishes • Describing the benefits of seasonal fruits and vegetables and the impact on the environment • Suggesting points for improvement when making a seasonal tart		• Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups	• Evaluating a recipe, considering: taste, smell, texture and origin of the food group • Taste testing and scoring final products • Suggesting and writing up points of improvements in productions • Evaluating health and safety in production to minimise cross contamination

Technical Language	• Understanding the difference between fruits and vegetables • Describing and grouping fruits by texture and taste	• 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 which grip was most effective	• Learning that climate affects food growth • Working with cooking equipment safely and hygienically • Learning that imported foods travel from far away and this can negatively impact the environment • Learning that vegetables and fruit grow in certain seasons • Learning that each fruit and vegetable gives us nutritional benefits • Learning to use, store and clean a knife safely		• Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed • Understanding what constitutes a balanced diet • Learning to adapt a recipe to make it healthier • Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option	• Learning how to research a recipe by ingredient • Recording the relevant ingredients and equipment needed for a recipe • Understanding the combinations of food that will complement one another • Understanding where food comes from, describing the process of 'Farm to Fork' for a given ingredient

Appendix 2 – Structures

Progression in Structures						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	• Learning the importance of a clear design criteria • Including individual preferences and requirements in a design	• Generating and communicating ideas using sketching and modelling • Learning about different types of structures, found in the natural world and in everyday objects	• Designing a castle with key features to appeal to a specific person/ purpose • Drawing and labelling a castle design using 2D shapes, labelling: - the 3D shapes that will create the features - materials need and colours	• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect • Building frame structures designed to support weight	• Designing a stable structure that is able to support weight • Creating frame structure with focus on triangulation	
Make	• Making stable structures from card, tape and glue • 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	• Making a structure according to design criteria • Creating joints and structures from paper/card and tape	• Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs • Making facades from a range of recycled materials	• 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 strong structure and for the cladding • Reinforcing corners to strengthen a structure • Creating a design in accordance with a plan • Learning to create different textural effects with materials	• Making a range of different shaped beam bridges • Using triangles to create truss bridges that span a given distance and supports a load • Building a wooden bridge structure • Independently measuring and marking wood accurately • Selecting appropriate tools and equipment for particular tasks • Using the correct techniques to saws safely • Identifying where a structure needs reinforcement and using card corners for support	
Evaluate	• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements	• Exploring the features of structures • Comparing the stability of different shapes • Testing the strength of own structures • Identifying the weakest part of a structure • Evaluating the strength, stiffness and stability of own structure	• 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	• Evaluating structures made by the class • Describing what characteristics of a design and construction made it the most effective • Considering effective and ineffective designs	• Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary • Suggesting points for improvements for own bridges and those designed by others	

Technical Language	• Describing the purpose of structures, including windmills • Learning how to turn 2D nets into 3D structures • Learning that the shape of materials can be changed to improve the strength and stiffness of structures • Understanding that cylinders are a strong type of structure that are often used for windmills and lighthouses • Understanding that windmill turbines use wind to turn and make the machines inside work • Understanding that axles are used in structures and mechanisms to make parts turn in a circle • Developing awareness of different structures for different purposes	• Identifying natural and man-made structures • Identifying when a structure is more or less stable than another • Knowing that shapes and structures with wide, flat bases or legs are the most stable • Understanding that the shape of a structure affects its strength • Using the vocabulary: strength, stiffness and stability • Knowing that materials can be manipulated to improve strength and stiffness • Building a strong and stiff structure by folding paper	• Identifying features of a castle • Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension • Extending the knowledge of wide and flat based objects are more stable • Understanding the terminology of strut, tie, span, beam • Understanding the difference between frame and shell structure	• Learning what pavilions are and their purpose • Building on prior knowledge of net structures and broadening knowledge of frame structures • Learning that architects consider light, shadow and patterns when designing • Implementing frame and shell structure knowledge • Considering effective and ineffective designs	• Exploring how to create a strong beam • Identifying arch and beam bridges and understanding the terms: compression and tension • Identifying stronger and weaker structures • Finding different ways to reinforce structures • Understanding how triangles can be used to reinforce bridges • Articulating the difference between beam, arch, truss and suspension bridges	

Appendix 3 - Mechanisms

Progression in Mechanisms						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	• Explaining how to adapt mechanisms, using bridges or guides to control the movement • Designing a moving story book for a given audience • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement		• Designing a toy which uses a pneumatic system • Developing design criteria from a design brief • Generating ideas using thumbnail sketches and exploded diagrams • Learning that different types of drawings are used in design to explain ideas clearly			• After experimenting with a range of cams, creating a design for an automatic toy based on a choice of cam to create a desired movement • Understanding how linkages change the direction of a force • Making things move at the same time
Make	• Following a design to create moving models that use levers and sliders • Adapting mechanisms		• Creating a pneumatic system to create a desired motion • Building secure housing for a pneumatic system • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy • Selecting materials due to their functional and aesthetic characteristics • Manipulating materials to create different effects by cutting, creasing, folding, weaving			• Measuring, marking and checking the accuracy of the jelutong and dowel pieces required • Measuring, marking and cutting components accurately using a ruler and scissors • Assembling components accurately to make a stable frame • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set
Evaluate	• Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed • Reviewing the success of a product by testing it with its intended audience • Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move		• Using the views of others to improve designs • Testing and modifying the outcome, suggesting improvements			• Evaluating the work of others and receiving feedback on own work • Applying points of improvements • Describing changes they would make/ do if they were to do the project again

Technical Language	• Learning that levers and sliders are mechanisms and can make things move • Identifying whether a mechanism • is a lever or slider and determining what movement the mechanism will make • Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement • Identifying what mechanism makes a toy or vehicle roll forwards • Learning that for a wheel to move it must be attached to an axle		• Understanding how pneumatic systems work • Learning that mechanisms are a system of parts that work together to create motion • Understanding that pneumatic systems can be used as part of a mechanism • Learning that pneumatic systems force air over a distance to create movement			• Using a bench hook to saw safely and effectively • Exploring cams, learning that different shaped cams produce different follower movements • Exploring types of motions and direction of a motion

Appendix 4 - Textiles

Progression in Textiles						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	• Using a template to create a design for a puppet	• Designing a pouch		• Writing design criteria for a product, articulating decisions made • Designing a personalised Book sleeve	• Designing a stuffed toy considering the main component shapes required and creating an appropriate template • Considering proportions of individual components	
Make	• Cutting fabric neatly with scissors • Using joining methods to decorate a puppet • Sequencing steps for construction	• Selecting and cutting fabrics for sewing • Decorating a pouch using fabric glue or running stitch		• Making and testing a paper template with accuracy and in keeping with the design criteria • Measuring, marking and cutting fabric using a paper template • Selecting a stitch style to join fabric, working neatly sewing small neat stitches • Incorporating fastening to a design	• Creating a 3D stuffed toy from a 2D design • Measuring, marking and cutting fabric accurately and independently • Creating strong and secure blanket stitches when joining fabric • Using applique to attach pieces of fabric decoration	
Evaluate	• Reflecting on a finished product, explaining likes and dislikes	• Troubleshooting scenarios posed by teacher • Evaluating the quality of the stitching on others' work • Discussing as a class, the success of their stitching against the success criteria • Identifying aspects of their peers' work that they particularly like and why		• Testing and evaluating an end product against the original design criteria • Deciding how many of the criteria should be met for the product to be considered successful • Suggesting modifications for improvement	• Testing and evaluating an end product and giving point for further improvements	
Technical Language	• Learning different ways in which to join fabrics together: pinning, stapling, gluing	• Joining items using fabric glue or stitching • Identifying benefits of these techniques • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template		• Understanding that there are different types of fastenings and what they are • Articulating the benefits and disadvantages of different fastening types	• Learning to sew blanket stitch to join fabric • Applying blanket stitch so the space between the stitches are even and regular • Threading needles independently	

Appendix 5 – Electrical Systems

Progression in Electrical Systems						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design				• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas		• Designing a steady hand game - identifying and naming the components required • Drawing a design from three different perspectives • Generating ideas through sketching and discussion • Modelling ideas through prototypes
Make				• Making a torch with a working electrical circuit and switch • Using appropriate equipment to cut and attach materials • Assembling a torch according to the design and success criteria		• Making electromagnetic motors and tweaking the motor to improve its function • Constructing a stable base for an electromagnetic game • Accurately cutting, folding and assembling a net • Decorating the base of the game to a high quality finish • Making and testing a circuit • Incorporating a circuit into a base
Evaluate				• Evaluating electrical products • Testing and evaluating the success of a final product and taking inspiration from the work of peers		• Testing own and others finished games, identifying what went well and making suggestions for improvement
Technical Language				• Learning how electrical items work • Identifying electrical products • Learning what electrical conductors and insulators are • Understanding that a battery contains stored electricity and can be used to power products • Identifying the features of a torch • Understanding how a torch works • Articulating the positives and negatives about different torches		• Understanding how electromagnetic motors work • Learning that batteries contain acid, which can be dangerous if they leak • Learning that when electricity enters a magnetic field it can make a motor

Appendix 6 – Vocabulary

Progression in vocabulary							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Food	Fruit, Vegetables, Safety, Blade, Tool, Edge, Handle, Chop, Slice, Cut, Saucepan, Blender, Chopping Board, Hob, Boil, Bend, Mix, Packaging, Recyclable, Metal, Plastic, Reusable		Alternative, Diet, Balanced Diet, Evaluation, Expensive, Healthy, Ingredients, Nutrients, Packaging, Refrigerator, Sugar, Substitute	Climate, Dry Climate, Exported, Imported, Mediterranean Climate, Nationality, Nutrients, Polar Climate, Recipe, Seasonal Food, Seasons, Temperate Climate, Tropical Climate		Beef, Cross-Contamination, Diet, Ethical Issues, Farm, Healthy, Ingredients, Method, Nutrients, Packaging, Reared, Recipe, Research, Substitute, Supermarket, Vegan, Vegetarian, Welfare	Accompaniment, Collaboration, Cookbook, Cross-Contamination, Equipment, Farm, Flavour, Illustration, Imperative-Verb, Ingredients, Method, Nationality, Preparation, Processed, Reared, Recipe, Research, Storyboard, Target Audience, Top Tips, Unit of Measure
Structures	Join, Stick, Cut, Blend, Slot, Scissors, Measure, Materials, Fix Waterproof, Absorb, Prediction, Variable, Experiment, Investigation, Float, Sink, Junk	Client, Design, Evaluation, Net, Stable, Strong, Test, Weak, Windmill	Function, Man-Made, Mould, Natural, Stable, Stiff, Strong, Structure, Test, Weak	2D shapes, 3D shapes, Castle, Design Criteria, Evaluate, Façade, Feature, Flag, Net, Recyclable, Scoring, Stable, Strong, Structure, Tab, Weak	Aesthetics, Cladding, Design Criteria, Evaluation, Frame Structure, Function, Inspiration, Pavilion, Reinforce, Stable, Structure, Target Audience, Target Customer, Texture, Theme	Abutment, Accurate, Arched Bridge, Beam Bridge, Coping Saw, Evaluation, File, Mark Out, Material Properties, Measure, Predict, Reinforce, Research, Sandpaper, Set Square, Suspension Bridge, Tenon Saw, Test, Truss Bridge, Wood	
Textiles	Thread, Weave, Pattern, Sew, Sewing Needle, Embroider, Design, Evaluate	Decorate, Design, Fabric, Glue, Model, Hand Puppet, Safety Pin, Staple, Stencil, Template	Accurate, Fabric, Knot, Pouch, Running-Stitch, Sew, Shape, Stencil, Template, Thimble		Aesthetics, Assemble, Book Sleeve, Design Criteria, Evaluation, Fabric, Fastening, Mock-up, Net, Running-Stitch, Stencil, Target Audience, Target Customer, Template	Accurate, Annotate, Appendage, Blanket-Stitch, Design Criteria, Detail, Evaluation, Fabric, Sew, Shape, Stuffed Toy, Stuffing, Template	

Mechanical systems		Assemble, Design, Evaluation, Mechanism, Model, Sliders, Stencil, Target audience, Template, Test		Exploded-Diagram, Function, Input, Lever, Linkage, Mechanism, Motion, Net, Output, Pivot, Pneumatic System, Thumbnail Sketch			Accurate, Assembly-Diagram, Automata, Axle, Bench Hook, Cam, Clamp, Component, Cutting List, Diagram, Dowel, Drill Bits, Exploded-Diagram, Finish, Follower, Frame, Function, Hand Drill, Jelutong, Linkage, Mark Out, Measure, Mechanism, Model, Research, Right-Angle, Set Square, Tenon Saw
Electronics					Battery, Bulb, Buzzer, Cell, Component, Conductor, Copper, Design Criteria, Electrical Item, Electricity, Electronic Item, Function, Insulator, Series Circuit, Switch, Test, Torch, Wire		Assemble, Battery, Battery Pack, Benefit, Bulb, Bulb Holder, Buzzer, Circuit, Circuit Symbol, Component, Conductor, Copper, Design, Design Criteria, Evaluation, Fine Motor Skills, Fit For Purpose, Form, Function, Gross Motor Skills, Insulator, LED, User

Vocabulary- Shows vocabulary they have learnt before in previous years