Gladstone Road Primary School Design Technology

Curriculum Plans

"Design is not just what it looks like and feels like. Design is how it works." Steve Jobs, Co-founder Apple Inc

Intent

Our Design Technology curriculum has been carefully planned and designed to encompass the content of the National Curriculum and ensure that it reflects and is distinct to our locality.

- Pupils' design technology education begins in the early years and builds year on year, developing pupils' expertise.
- Curriculum plans have been constructed effectively to ensure that pupils know more, remember more and are able to do more.
- Golden Threads, based on the four key strands as well as cooking and nutrition have been identified for each year group and underpin the key knowledge and concepts taught through our curriculum.
- Key knowledge has been mapped out from the early years to the end of KS2 to ensure that that the curriculum is coherently sequenced and there is clear progression.
- The organisation of the curriculum builds knowledge so that pupils can draw on it in future learning.
- Vocabulary has been identified and outlined clearly so that this can be taught explicitly within lessons.
- Clearly defined end points have been identified to ensure that pupils build upon prior learning and develop their knowledge of key concepts.
- Pupils commit knowledge to their long-term memory through recalling and repeated practice outlined in plans.

Implementation

Within and beyond our classrooms we provide a range of opportunities and implement a range of teaching methods to ensure that over the course of study, teaching is designed to help learners to remember in the long term the content they have been taught and to integrate new knowledge into larger concepts.

- Knowledge organisers which outline knowledge (including vocabulary) all children must master and apply in lessons are introduced at the start and referred to throughout a unit of study.
- A well sequenced cycle of lessons carefully plans for progression and depth concentrating on design technology knowledge and skills suited to the age group.
- Lessons follow a consistent structure of: retrieval, explanation, application and assessment which may include such features as questioning, modelling, individual, partner, group or whole class activities.
- Enrichment activities/visits are carefully used where appropriate to ensure pupils are able to practise and apply their knowledge and skills.
- Our inclusive approach is demonstrated through the way in which tasks and activities are adapted to ensure that all pupils are able to access the curriculum.
- Through retrieval, teachers make sure that pupils can draw on what they already know so that they can remember more.
- Key vocabulary is explicitly taught to enable pupils to develop their range of design technology vocabulary and understanding.
- Assessment for learning strategies are used at the start, during and at the end of lessons to assess pupils' learning and identify any gaps or misconceptions.

Impact

- Our Design Curriculum is high quality, well thought out and is planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress. In addition, we measure the impact of our curriculum through the following methods:
    - Pre and post unit assessments
    - Assessment against 'End of Year Expectations' with clearly identified end points. These are then passed to the receiving teacher to ensure any gaps can be addressed when a key concept is revisited.

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GOLDEN THREADS	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Designing	EAD: Creating with materials 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.	**Understanding Contexts, Users and Purposes** Across KS1 pupils should: • work confidently within a rangeof contexts, such as imaginary,story-based, home, school, gardens, playgrounds, local community, industry and the wider environment • state what products they aredesigning and making • say whether their products arefor themselves or other users • describe what their productsare for • say how their products willwork • say how they will make theirproducts suitable for their intended users • use simple design criteria tohelp develop their ideas		**Understanding Contexts, Users and Purposes** Across KS2 pupils should: • work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment • describe the purpose of their products • indicate the design features of their products that will appeal to intended users • explain how particular parts of their products work In early KS2 pupils should also: • gather information about the needs and wants of individuals and groups • develop their own design criteria and use these to inform their ideas In late KS2 pupils should also: • carry out research, using surveys, interviews, questionnaires and web-based resources • identify the needs, wants, preferences and values of individuals and groups • develop a simple design specification to guide their thinking			
		Generating, Developing, Modelling and Communicating Ideas Across KS1 pupils should: • generate ideas by drawing on their own experiences • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing • model ideas by exploring materials, components and construction kits and by making templates and mock- ups • use information and communication technology, where appropriate, to develop and communicate their ideas		**Generating, Developing, Modelling and Communicating Ideas** Across KS2 pupils should: • share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas In early KS2 pupils should also: • generate realistic ideas, focusing on the needs of the user • make design decisions that take account of the availability of resources In late KS2 pupils should also: • generate innovative ideas, drawing on research • make design decisions, taking account of constraints such as time, resources and cost			
Making	EAD: Creating with materials Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations,	**Planning** Across KS1 pupils should: • plan by suggesting what to do next • select from a range of tools and equipment, explaining their choices • select from a range of materials and components according to their characteristics		**Planning** Across KS2 pupils should: • select tools and equipment suitable for the task • explain their choice of tools and equipment in relation to skills and techniques they will be using • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities In early KS2 pupils should also: • order the main stages of making In late KS2 pupils should also: • produce appropriate lists of tools, equipment and materials that they need • formulate step-by-step plans as a guide to making			

	explaining the process they have used. <u>PD: Fine motor</u> Use a range of small tools, including scissors, paintbrushes and cutlery.	**Practical Skills and Techniques** Across KS1 pupils should: • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design	**Practical Skills and Techniques** Across KS2 pupils should: • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components In early KS2 pupils should also: • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy In late KS2 pupils should also: • accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components • accurately apply a range of finishing techniques, including those from art and design • use techniques that involve a number of steps • demonstrate resourcefulness when tackling practical problems
Evaluating Products	<u>EAD: Creating with materials</u> 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.	**Own Ideas and Products** Across KS1 pupils should: • talk about their design ideas and what they are making • make simple judgements about their products and ideas against design criteria • suggest how their products could be improved	**Own Ideas and Products** Across KS2 pupils should: • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work • In early KS2 pupils should also: • refer to their design criteria as they design and make • use their design criteria to evaluate their completed products • In late KS2 pupils should also: • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • evaluate their ideas and products against their original design specification
		Existing Products Across KS1 pupils should explore: • what products are • who products are for • what products are for • how products work • how products are used • where products might be used • what materials products are made from • what they like and dislike about products	**Existing Products** Across KS2 pupils should investigate and analyse: • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants In early KS2 pupils should also investigate and analyse: • who designed and made the products • where products were designed and made • when products were designed and made • whether products can be recycled or reused In late KS2 pupils should also investigate and analyse: • how much products cost to make • how innovative products are • how sustainable the materials in products are • what impact products have beyond their intended purpose

			Key Events and Individuals Across KS2 pupils should know: • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products
Technical Knowledge	<u>EAD: Creating with materials</u> 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.	**Making Products Work** Across KS1 pupils should know: • about the simple working characteristics of materials and components • about the movement of simple mechanisms such as levers, sliders, wheels and axles • how freestanding structures can be made stronger, stiffer and more stable • that a 3-D textiles product can be assembled from two identical fabric shapes • that food ingredients should be combined according to their sensory characteristics • the correct technical vocabulary for the projects they are undertaking	**Making Products Work** Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • that materials can be combined and mixed to create more useful characteristics • that mechanical and electrical systems have an input, process and output • the correct technical vocabulary for the projects they are undertaking In early KS2 pupils should also know: • how mechanical systems such as levers and linkages or pneumatic systems create movement • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products • how to make strong, stiff shell structures • that a single fabric shape can be used to make a 3D textiles product • that food ingredients can be fresh, pre-cooked and processed In late KS2 pupils should also know: • how mechanical systems such as cams or pulleys or gears create movement • how more complex electrical circuits and components can be used to create functional products • how to program a computer to monitor changes in the environment and control their products • how to reinforce and strengthen a 3D framework • that a 3D textiles product can be made from a combination of fabric shapes • that a recipe can be adapted by adding or substituting one or more ingredients
		Food Preparation, Cooking and Nutrition Across KS1 pupils should know: • how to name and sort foods into the five groups in The Eatwell plate • that everyone should eat at least five portions of fruit and vegetables every day • how to prepare simple dishes safely and hygienically, without using a heat source • how to use techniques such as cutting and peeling	**Food Preparation, Cooking and Nutrition** Across KS2 pupils should know: • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking • In early KS2 pupils should also know: • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell plate • that to be active and healthy, food and drink are needed to provide energy for the body • In late KS2 pupils should also know: • that recipes can be adapted to change the appearance, taste, texture and aroma • that different food and drink contain different substances – nutrients, water and fibre – that are needed for health

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KS1	Autumn Term	Spring Term	Summer Term
Prior Knowledge (Retrieval)	EAD: Creating with materials 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. • How to make a simple sandwich and chose the correct tools for buttering and cutting. • How to offer a simple evaluation of their creation and whether it is fit for purpose or if the desired outcome has been achieved. PD: Fine motor Use a range of small tools, including scissors, paintbrushes and cutlery. • Use a range of tools competently, safely and confidently e.g. pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. PSED: Managing Self *Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.* • The terms 'healthy' and 'unhealthy'. • Vegetables and fruit help to keep us 'healthy'.	EAD: Creating with materials 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. • Different materials have different 'properties' and how this influences the creation process i.e. recognise card is stronger than paper when creating a 3D structure. • Construct a paper lantern by cutting vertical lines in paper and using glue to fix the structure. • Create stick puppets from a variety of resources without templates. • Join materials together to make a simple structure i.e using lollypop sticks to make a ladder for pirates/rescuing Rapunzel. • Discuss their creations and functionality. PD: Fine motor Use a range of small tools, including scissors, paintbrushes and cutlery. • Use a range of tools competently, safely and confidently e.g. pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.	EAD: Creating with materials 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. • Different materials have different 'properties' and how this influences the creation process i.e. recognise card is stronger than paper when creating a 3D structure. • Split pins can be used to create 'moving parts' to their creations. UTW: The World • Know that familiar moveable toys have different mechanisms- sliders/levers/ string/ buttons. PD: Fine motor Use a range of small tools, including scissors, paintbrushes and cutlery. • Use a range of tools competently, safely and confidently e.g. pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.
Y1	**D & T Element – Food and nutrition** Fruit Salad Knowledge and Skills to be developed: **Designing:** Use given simple design criteria to design their own products by making simple drawings and labelling parts. Create simple templates and mock-ups based on their own simple designs. **Making:** Plan by suggesting what to do next. Select from a range of tools and equipment to perform practical tasks. Knives and scissors Select from and use a range of materials and components according to their characteristics. With help, measure, mark and cut a range of materials. Fruit	**D & T Element - Structures** Making a house for Percy Knowledge and Skills to be developed: **Designing:** Use given simple design criteria to design their own products by making simple drawings and labelling parts. Create simple templates and mock-ups based on their own simple designs. **Making** Plan by suggesting what to do next Select from a range of tools and equipment to perform practical tasks. Paper, card, and scissors, Select from and use a range of materials and components according to their characteristics. With help, measure, mark and cut a range of materials. Paper and card Use simple finishing techniques to improve the appearance of their product. Painting	**D & T Element - Mechanisms** STEM - Boats Knowledge and Skills to be developed: **Designing:** Use given simple design criteria to design their own products by making simple drawings and labelling parts. Create simple templates and mock-ups based on their own simple designs. **Making** Plan by suggesting what to do next Select from a range of tools and equipment to perform practical tasks. Paper, card and scissors. Select from and use a range of materials and components according to their characteristics. With help, measure, mark and cut a range of materials. Paper and card Use simple finishing techniques to improve the appearance of their product.

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	Technical Knowledge: To use correct technical vocabulary vegetable, fruit. texture, grouping, apron. **Cooking and Nutrition:** Describe that all food comes from plants and animals. Prepare a simple dish safely and hygienically, without using a heat source. Cut, peel, and grate **Evaluating:** Explore and evaluate a range of existing products. Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria.	**Technical Knowledge:** Build freestanding structures. *(Explore ways to strengthen and stiffen to make more stable.) structure, strengthen* **Evaluating:** Explore and evaluate a range of existing products. Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria.	**Technical Knowledge** Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products To use correct technical vocabulary *nets, joins, levers, sliders* **Evaluating** Explore and evaluate a range of existing products. Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria.
Future learning	**Healthy vegetable wrap (Y2)** • Making a healthy vegetable wrap • Name and sort foods into the 5 groups in the Eatwell plate (fruit and vegetables, carbohydrates, protein, Dairy and other alternatives, oils and spreads)	**Mini Treehouse (Y3)** • Build a treehouse using wood • Draw annotated sketches and create a plan • Describe how mechanical systems create movement. • Learn more about inventors that have created	**Wheeled vehicles (Y2)** • Making a wheeled vehicle using wheels and axles • Use equipment such as saws, bench hooks and scissors
Design Vocabulary	Design, product, design criteria, drawings, labels, mock-up, purpose, user, materials, food groups, develop, communicate, sketch, suitable, ingredients	Design criteria, Requirements, Structure, Construction, Describing, 2D/3D shapes, Improvements, Construction, Functioning Stiffness Design, product, design criteria, drawings, labels, mock-up, purpose, user, materials, food groups, develop, communicate, sketch, suitable, structure, construction, stiffness, function	Design, product, design criteria, drawings, labels, mock-up, purpose, user, materials, function, properties, develop, communicate, sketch, suitable,
Make Vocabulary	Fruits, vegetables, seed, root, vine, stem, leaves, describing, fruit, vegetables, health, safety, hygiene, apron, knife, board, peel, grate, cut, core.	Scissors, Assemble, Change, Gluing, Sticking, Stapling, Stiffness, Cut, Measure, Cardboard, Paper, Roof, Doors Joins, Hinges, Windows, Chimney, Walls	Paddle, functioning, net, mechanisms, movement, assemble, shape.
Evaluate Vocabulary	Evaluating, reflecting, reviewing, improvements, compare, finished product, change, compare, taste, texture, Savoury, Sweet	Evaluating, reflecting, reviewing, improvements, compare, finished product, alter	Evaluating, reflecting, reviewing, improvements, compare, finished product, alter
Technical Knowledge Vocabulary	Health, safety, hygiene	net, house, hinge, join, safety.	structure, vessel, scientist, function, boat
Quality texts	Oliver's Fruit Salad – Vivian French Oliver's Vegetables – Vivian French	Who Built That? Modern Houses: An Introduction to Modern Houses and Their Architects – Didier Cornille Percy the Park Keeper – Nick Butterworth	Look how things work – Usborne Little Miss Inventor – Roger Hargreaves
Enrichment visits (visits/ visitors)	Fun filled Food Journey – visitor into school workshop		Visiting the beach to observe scenery.

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National Curriculum	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] Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria	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	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 • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.