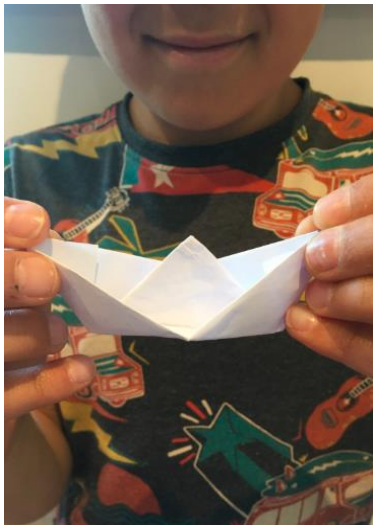
Design & Technology Subject Overview

The Bishops' C of E Learning Academy

At The Bishops' we aim to ensure that all children are inspired to DESIGN, MAKE THINGS and to be INQUISITIVE. We want all children to imagine, design and make products that solve real and relevant problems within a variety of contexts. We believe that Design & Technology should be about supporting pupils to take risks while becoming an innovative citizen of our developing, and ever changing, world in which we live. Through the evaluation of Design & Technology we want to inspire children to understand the impact of designing and creating new technology and its essential contribution to creativity, culture, wealth and well-being of our nation and the world. We ensure that all children learn about Design & Technology through a variety of projects. Through the development of skills children begin designing appealing products for themselves whilst gaining an understanding of future design and functional projects. Children are encouraged to evaluate existing products and discuss improvements to their designs and products. In Design and Technology lessons, children will produce creative designs exploring ideas needed to turn their finished article into reality. We believe that Design & Technology is not just taught in our DT lessons but across the whole curriculum. The children's learning and skills progress through each year group where the purpose and complexity is suitably increased (see the Progression of Skills below).

A summary of our aims at The Bishops' in DT are to:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test our ideas and products and the work of others
- understand the principles of nutrition and to learn how to cook



Vocabulary underpins Design and Technology understanding. At The Bishops' C of E Learning Academy we equip our pupils with subject specific terminology, allowing them to effectively communicate their findings and understanding. These skills not only help our pupils become inquisitive inventors and explorers, it also enables them to use these skills and vocabulary to further access the rest of the curriculum. We enrich our Design and Technology curriculum by varying the ways in which we reach our learning objectives through our exciting and engaging topics. By doing so, we can take a child's imagination and curiosity to the next level. Teaching different aspects of Design and Technology through topic work as well as the National Curriculum, we believe, gives pupils the best of both structure and freedom in their learning, allowing them to apply their creative and investigative knowledge to abstract contexts.

Last updated June 2020 - Judith Hine

Outdoor learning is instilled in our ethos as a school and each year group are able to access different settings in their local community. We believe this builds a positive relationship between the children and their local environment which is vital to enable them to understand the changing world around them. Children learn through hands on investigation and memories which bring their learning to life. They are able to use skills they have acquired in the classroom and apply these to real world scenarios.

We believe that by integrating these three different approaches we are able to give children a broad and balanced introduction to Design and Technology: igniting their passion, encouraging curiosity, promoting a love of learning as well as the world and phenomena around them. In doing this we know that when children leave The Bishops' C of E Learning Academy they are equipped to access and thrive in an ever changing and technological world.

At the Bishops' the children will be involved in:

- Activities which involve investigating and evaluating existing products
- Focused tasks in which children develop particular aspects of knowledge and skills
- Designing and making activities in which children design and make 'something' for 'somebody' for 'some purpose'

Project areas undertaken from EYFS to Year 6 cover: Food Technology, Mechanism, Structures, Textiles and Electrical Systems.

Below is an overview of the skills, vocabulary, design, making (construction) and evaluation needed.

Each class will complete three projects throughout all the year groups and as the children progress throughout the school will cover all of the skills from the D&T National Curriculum.

The children at The Bishops' will work on projects that will be displayed in classrooms. Parents might be asked to support and subsidise these projects through a voluntary donation to fund the resources. The projects will remain in school for each term and subsequently taken home to share with friends and family.

Curriculum Intent, Implementation and Impact Overview		
Subject: Design and Technology	**Subject Leader: Judith Hine**	
Intent	**Implementation**	**Impact**
To ensure all children : • Develop creative, technical and practical expertise needed to participate in an increasingly technological world. • Are given the knowledge they need to learn about being creative, designing, developing skills and evaluating their products and the work of others. • Through our broad and balanced curriculum develop the knowledge, understanding and skills that are progressive as well as transferable to further education and beyond • Will be equipped with the vocabulary they need to become enterprising citizens and ask questions about our world • Have access to a curriculum designed to develop knowledge, understanding and	**Clear and comprehensive scheme of work in line with the National Curriculum –** *Teaching and Learning should show progression across all key stages within the strands of Design and Technology. Teaching and Learning should plan for practical investigative opportunities within D&T incorporating the opportunity to design, make and evaluate whilst gaining technical knowledge.* **Knowledge Organisers** *Children have access to key language and meanings in order to understand and readily apply to their written, mathematical and verbal communication of their skills.* **Children will access resources to acquire learning through Design & Technology equipment, digital technology, practical investigations and photographic equipment** *Children will use a range of secondary resources to develop their knowledge and understanding that is integral to their learning. Resources are checked to ensure they are suitable, appropriate and useful.* **Children will reflect on previous learning and cross curricular links will be made through Literacy and Theme.** *Children will be able to build on prior knowledge and link ideas together, enabling them to question and become enquiry based learners.* **Educational Visits** *Where applicable links to Design & Technology and STEM will be made to develop the children's topical learning.* **British Values and PSHE** *Children will learn and revisit the importance of our world and how it should be treated.* **Monitoring** *A regular book scrutiny and learning walk will enable the curriculum leaders to check coverage and progression.* **Staff Development** Teachers have access to CPD to improve their confidence and ability to teach Design & Technology effectively. Links with the Design & T Association to develop teaching of D&T across the school.	Inspired, inquisitive, enthusiastic, excited and curious children who are able to communicate their understanding of the world in Design & Technology. Children will achieve age related expectations in Design & Technology at the end of their cohort year. Children will retain knowledge that is pertinent to understand the uses of Design & Technology today and how vital it is to the world's future prosperity. Children will be able to question ideas and reflect on knowledge. Children will work collaboratively and practically to investigate and experiment. Children will be able to explain the design, make and evaluate their projects. Pupils can explain how to take risks, become resourceful, innovative, enterprising and capable citizens.

sills that progressive from EYFS to Year 6. • Are provided with a series of projects building on prior skills and knowledge that progress to Year 6		

DT Progression of Skills

Key DT skills

Design:

Make appropriate suggestions for the appearance and materials for an item, consider how it will be made.

Make:

Choosing and using the appropriate tools, equipment and resources to make ***high quality*** prototypes and products ***following the design***.

Evaluate:

Critique, evaluate and test ideas and products, suggesting ideas for improvements and explaining how the product is suitable for purpose.

Technical knowledge:

Use and apply knowledge of materials, fixings and linkages to reinforce structures and build models with moving parts.

Food and nutrition:

Understand the principles of nutrition and healthy eating, use basic techniques for food preparation and cooking.

Areas to be covered: food, textiles, construction, technological developments. **These should incorporate:** health & safety, design, electronics & electricals, mechanics & engineering, tools & equipment.

DT Curriculum Coverage

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils 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. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

	Foundation	Year 1	Year 2	Year 3	Year 4	Year 5/6 20/21	Year 5/6 21/22
Design	Expressive Arts and Design (EAD) - exploring and using media and materials (EMM). 30-50 months •Uses various construction materials. •Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. • Joins construction pieces	**Skill - Structures - Freestanding structures - Garden Party** **Skill - Mechanisms - Levers and Sliders - Moving Pictures** Design a functional product with a purpose. Design a product to do a specific job.	**Skill - Mechanisms - Wheels and Axels - Make a Simple Car** **Skill - Textiles: Templates and Joining - Make a sun hat for Teddy/Simple toy/Shape** Design an appealing and functional product with a purpose for themselves using	**Skill - Mechanisms Levers and Linkages - Pop-up roman Book - History** **Skill - Textiles - 2D and 2D Product - Wallet or purse (folded)** Design an appealing and functional product with a clear purpose and use for themselves and others. Sketch and label diagrams of their design ideas. Discuss their ideas and explain the purpose,	**Skill: Electrical Systems - Simple circuits and switches - Create a lamp using recycled materials** **Textiles - Draw String bag combining different fabrics - applique** Skill: Textiles - Design an appealing and functional product for a particular audience.	**Skill: Mechanical Systems - Pulleys or Gears - Fairground** **Skill: Electrical Systems More Complex Switches and Circuits - using crumble** Research existing products and develop design criteria using: Design functional, appealing products aimed at particular individuals or groups. Create detailed design criteria for a product.	**Skill: Mechanical Systems: Cams Message** **Skill: Structures - Frame Structures/ or Textiles** Research existing products to inform design choices and criteria, taking into consideration user needs using: Design innovative, functional, appealing products aimed at

	together to build and balance. •Realises tools can be used for a purpose 40-60 months • Experiments to create different textures. • Understands that different media can be combined to create new effects. • Manipulates materials to achieve a planned effect. • Constructs with a purpose in mind, using a variety of resources. • Uses simple tools and techniques competently and appropriately. • Selects appropriate resources and adapts work where necessary. • Selects tools and techniques needed to shape, assemble and join materials they are using.	Generate ideas based on simple design and their own experiences explaining what they could make. Develop, model and communicate ideas through drawings and mock ups using card, paper and with technology if appropriate. Draw and label pictures of their design ideas Discuss their ideas and explain their choices.	Use a set of criteria to aid the design process. Draw, and make notes on, their design ideas. Develop, model and communicate ideas through drawings and mock ups using card, paper and with technology if appropriate. Explain what they are making, and what they will need to use.	choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use. Produce annotated sketches and prototypes, final product sketches and pattern pieces	Create design criteria for a product. Use sketches, labelled diagrams and notes to explain their design. Explain their ideas, the purpose, choice of materials, any necessary changes and how it will be made. Explain what they are making, why they are making it and what they will need to use, using the design criteria.	Communicate ideas by developing sketches, labelled diagrams and notes to support their design. Communicate ideas through discussion, presentation and peer critique. Adapt designs, if needed, after design discussion.,	particular individuals or groups. Develop a set of criteria, based on research, to aid design process. Communicate ideas by using cross-sectional diagrams, exploded diagrams, prototypes, pattern ideas and computer-aided design. Communicate ideas through oral and ICT presentations. Adapt designs, where necessary, based of design feedback.
Make		**Skill - Structures - Freestanding structures - Garden Party.** Plan by suggesting what to do next. Select and use tools, skills and techniques,	**Mechanisms - wheels and axels.** Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.	**Mechanisms -Levers and Linkages** Order the main stages of making Select from and use with some accuracy to cut, shape and join paper and card.	**Electrical Systems - Simple circuits and switches - Create a lamp using recycled materials** Order the main stages of making	**Mechanical Systems - Pulleys or Gears - Fairground** Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.	**Skill: Mechanical Systems: Cams Message** Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if

	Early Learning Goal (EMM) **They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.** (EAD)- being imaginative (BI) 40-60 months •Create simple representations of events, people and objects. **Early Learning Goal (BI)** **Children 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.** Physical development- moving and	explaining their choices. Select new and reclaimed materials and construction kits to build their structures. Use simple finishing techniques suitable for the structure they are creating. **Skill - Mechanisms - Levers and Sliders - Moving Pictures** Plan by suggesting what to do next. Select and use tools, explaining their choices, to cut, shape and join paper and card. Use simple finishing techniques suitable for the product they are creating.	Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. **Textiles - templates and joining.** Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. Select from and use textiles according to their characteristics.	Select from and use finishing techniques suitable for the product **Textiles - 2D and 3D product in Textiles.** Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern Know and choose which equipment is used for cutting, shaping joining and finishing from a suggested range. Know some characteristics of materials and components and select from a wide range of these, depending on use.	Select from and use tools and equipment to cut, shape, join and finish with some accuracy Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. **Textiles - Combining different fabrics - applique** Produce detailed lists of equipment and fabrics relevant to their tasks Formulate step-by-step plans. Select from and use a range of tools and equipment to make products that are accurately	Select from and use a range of equipment to make products that are accurately assembled and well finished. Work with the constraints of times, resources and cost. **Electrical Systems More Complex Switches and Circuits - Alarming Vehicles or using crumble.** Formulate a step-by-step plan to guide making listing tools equipment, materials and components. Completely select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. Create and modify computer control program to enable an electrical product to work automatically in response to changes in the environment. . Use some specialist equipment accurately and safely. Select from and use a range of specific materials and	appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Skill: Structures - Frame Structures** Formulate a clear plan, including a step-by-step list of what needs to done and lists of resources to be used. Completely select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. Use finishing and decorative techniques suitable for the product they are designing and

	handling 40-60 months• Uses simple tools to effect changes to materials. •Handles tools, objects, construction and malleable materials safely and with increasing control Early learning goal **They handle equipment and tools effectively**				assembled and well finished.	components according to their specific use and appearance.	making.
Evaluate		Explore, investigate and use existing products. Say whether or not their product does the job it is supposed to. Explain why their product is good.	Explore and evaluate existing products. Say why a product is good (or not) and what job it does (and if it good / bad at this job). Evaluate their product against their design criteria.	Explore and analyse existing products. Consider why products are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work. Consider how some products have helped the world.	Explore and analyse existing products against a set of criteria. Consider how products were made, why they are good (or not) and how effective they are at meeting their purpose. Suggest ways of improving their own and others' work based on how effective the product is. Consider how some people and products have helped the world.	Investigate, explore and analyse a range of existing products based on a set of criteria. Evaluate their ideas, prototypes and products against a specific set of criteria. Suggest ways of improving their own and others' work, using their criteria Consider how some people and products have changed the world.	Investigate and explore a range of existing products, considering construction and purpose. Evaluate their ideas, prototypes and products against a specific set of criteria they have devised. Suggest ways of improving own and others' work, using specific criteria. Identify and understand how key events and individuals in design and technology have helped shape the world.
Technical knowledge		**Skill - Structures - Freestanding structures - Garden Party**	**Wheels and Axels - Make a Simple Car**	**Mechanisms: Levers and linkages** Understand and use lever and linkage mechanisms	**Electrical Systems - Simple circuits and switches - Create a lamp**	**Mechanical Systems - Pulleys or Gears - Fairground**	**Mechanical Systems: Cams Message.**

		Know how to make freestanding structures stronger, stiffer and more stable. Know and use technical vocabulary relevant to the project. **Skill - Mechanisms - Levers and Sliders - Moving Pictures** Explore and use sliders and levers. Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project.	Explore and use wheels, axles and axle holders. Distinguish between fixed and freely moving axles. Know and use technical vocabulary relevant to the project. **Textiles: Templates and Joining - Make a sun hat for Teddy** Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. Explore different finishing techniques e.g. using painting, fabric crayons, stitching,	Distinguish between fixed and loose pivots Know and use technical vocabulary relevant to the project **Textiles - 2D and 3D product in Textiles.** Know how to strengthen, stiffen and reinforce existing fabrics. Understand how to securely join two pieces of fabric together Understand the need for patterns and seam allowances Know and use technical vocabulary relevant to the project	**using recycled materials** Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. Apply their understanding of computing to program and control their products. Know vocabulary relevant to the project. **Textiles - Combining different fabrics - applique** Know how to strengthen, stiffen and reinforce existing fabrics. Understand how to securely join two pieces of fabric together Understand the need for patterns	Understand that mechanical and electrical systems have an input, process and an output. Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement Know and use technical vocabulary relevant to the project **Electrical Systems More Complex Switches and Circuits - Alarming Vehicles or using crumble.** Understand and use electrical systems in their products. Apply their understanding of computing to program, monitor and control their products. Know and use the technical vocabulary relevant to the project. Create models which use series circuits, switches, bulbs, buzzers and motors.	Understand that mechanical systems have an input, process and an output. Understand how cams can be used to produce different types of movement and change the direction of movement. Know and use technical vocabulary relevant to the project. **Structures - Frame Structures** Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical frameworks Design and build more complex frameworks, using a range of materials to support mechanisms. Apply understanding of how to

			sequins, buttons and ribbons. Know and use technical vocabulary relevant to the project		and seam allowances Know and use technical vocabulary relevant to the project	Use ICT to monitor, program and control their products.	strengthen, stiffen and reinforce more complex structures. Understand and use CAM mechanisms to create moving models. Understand and use a range of electrical systems in their products, such as series circuits, incorporating switches, bulbs, buzzers and motors. Apply their understanding of computing to program, monitor and control their products.
Cooking and nutrition		**Healthy Eating - Preparing Fruit and Vegetables** **Fruit Salad** Understand which foods are healthy and which foods are treats using a wide range of fruit and vegetables Suggest healthy dishes to prepare	**Healthy Eating - Soup** Understand what a healthy and varied diet is. Use knowledge of healthy eating to prepare soup. Understand where food comes from (plant or animal).	**Healthy and varied diet - Super Salads** Understand what a healthy, varied and balanced diet is. Choose, prepare and cook dishes using some cooking techniques - ie: sandwiches, wraps, rolls, pitta pockets, blinis, rice cakes, toasties, snack bar salad snacks.	**Varied Diet Scones - create a cream tea - make a class pot of jam - grow own strawberries?** Understand why we need to eat a healthy, varied and balanced diet. Understand why we need particular food groups.	**Celebrating Culture and Seasonality** **Breads from around the world** Understand which foods will provide a healthy, varied and balanced diet. Understand which food groups help our bodies to function - Celebrating Culture - bread, pizza, savoury biscuits, scones,	**Celebrating Culture and Seasonality** **Pasties** Understand and apply the principles of a healthy and varied diet. Understand which foods are sources of required nutrition (including minerals, vitamins, etc.)

		and make - ie - salads, fruit drinks and smoothies, fruit or vegetable kebabs Understand where some foods come from (meat, fruit and veg). **To use different utensils:** chopping boards, knives, peelers, graters, skewers, juicers, spoons, **Key vocabulary:** fruit and vegetable names, names of equipment and utensils **Taste and evaluate vocab:** 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,	**To use different utensils:** chopping boards, knives, peelers, graters, skewers, spoons, jugs, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities **Key vocabulary:** fruit and vegetable names, names of equipment and utensils **Taste and evaluate vocab:** 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, planning, investigating tasting, arranging, popular, design, evaluate, criteria	Understand where fruit, vegetables, meat and meat products come from. **To use different utensils:** knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons of various sizes, parchment paper and plastic film **Key vocabulary:** 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 planning, design criteria, purpose, user, annotated sketch, sensory evaluations	Choose, prepare and cook dishes using different cooking techniques. Know which foods can be grown or reared locally. **To use different utensils:** knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons of various sizes, parchment paper and plastic film **Key vocabulary:** texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal,	muffins, cereal snack, soup or other. Prepare and cook dishes using different cooking techniques based on a specific audience. Understand why we can only grow some foods in our country and why we need to get some foods from other countries. **To use different utensils:** weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film **Key Vocabulary:** 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	Prepare and cook dishes that are 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. **To use different utensils:** weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film **Key Vocabulary:** ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition,

		ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria			harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations	out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief	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 design specification, innovative, research, evaluate, design brief