St Leonard's Church of England Primary School

Design and Technology Policy

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Policy written by:	Leah Cross
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St Leonard's Church of England Primary School
Design and Technology Curriculum

Vision for our children at St. Leonard's:

The design and technology policy is intended as a framework to…

…encourage pupils to be confident, creative thinkers who consider their own and others' needs, wants and values when designing and making products. To inspire pupils to achieve real, relevant, appealing and sustainable solutions working both independently and collaboratively and to build a repertoire of knowledge, understanding and skills for a wide range of uses.

This is in line with the school's mission statement:

Our mission is to nurture happy, confident children, growing and learning together in the footsteps of Jesus Christ.

This policy should be read in conjunction with other policies including:

- Early Years Policy
- Special Educational Needs and Disability Policy

Intent

At St Leonard's Church of England Primary School, design and technology equips children with the knowledge, skills and experience to develop as confident, creative thinkers and problem-solvers. 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. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling and testing and to be reflective learners who evaluate their work and the work of others. Our curriculum ensures pupils gain an understanding of existing products and systems and are given opportunities to respond with innovative, appealing solutions, working independently, collaboratively and sustainably where possible to generate and develop ideas. The evaluation of past and present Design and Technology encourages pupils to develop a critical understanding of how products impact on daily life and the wider world. We aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who have the skills to contribute to future design advancements.

Through the Design and Technology process, pupils draw upon and apply knowledge and skills gained in other areas of learning in a meaningful and purposeful way. A deeper understanding and appreciation of learning in other subject areas include mathematics, English, science, computing and art and design.

St Leonard's design and technology fulfils the statutory requirements of the National Curriculum (2014). The aims of Design and Technology in our school are:

- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work, and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To foster enjoyment, satisfaction and purpose in designing and making;
- To use ICT software to assist our designing and learning.
- To leave school equipped with a range of skills to succeed in secondary education and be innovative and resourceful members of society.

Implementation

Design and Technology in Early Years Foundation Stage (EYFS)

The EYFS framework is structured very differently to the National Curriculum as it is organised across seven areas of learning rather than subject areas. The skills taught across EYFS feed into the teaching of design and technology (National Curriculum) as the children progress through school. In EYFS, children are given opportunities to develop prerequisite skills for design and technology within the National Curriculum. Units of work from 'Kapow Primary' have been adapted to ensure our children follow a bespoke curriculum. The most relevant statements (taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three- and Four-Year-Olds and Reception) are taught, monitored and evaluated to match the programme of study for design and technology. The most relevant statements for design and technology are taken from the following areas of learning:

- Physical Development
- Understanding the world
- Expressive Arts and Design

We encourage the development of skills; knowledge and understanding that help Little Lennie's and Reception children make sense of their world as an integral part of the school's work. We relate the development of the children's knowledge and understanding of the world to the objectives set out in the Early Learning Goals. These early experiences include asking questions about how things work; investigating and using a variety of construction kits, materials, tools and products; developing making skills; and handling appropriate tools and

construction materials safely and with increasing control. These activities, taking place both indoors and outdoors, attract the children's interest and curiosity.

Design and Technology in KS1 and KS2

To ensure that children receive the breadth of learning required by the National Curriculum and that they increase their knowledge, understanding and skills over time, we follow the Kapow Primary's Design and Technology Scheme of Learning. Kapow Primary's Design and Technology Scheme of Work enables pupils to meet the end of key stage attainment targets in the National Curriculum.

The National Curriculum organises the Design and Technology attainment targets under four subheadings or strands:

- Design
- Make
- Evaluate
- Technical Knowledge

Through Kapow Primary's Design and Technology Scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in six key areas:

The content of our curriculum has been categorised into six areas of Design and Technology:

- Cooking and Nutrition (Food)
- Mechanisms
- Structures
- Textiles
- Electrical Systems (KS2) **and**
- Digital World (KS2).

Progression and Skills

Key areas are revisited again and again with increasing complexity, allowing pupils to revisit and build on previous learning. The Kapow Primary's scheme gives an overview of the skills and knowledge covered in each unit and how these develop through the scheme of work, ensuring that we provide opportunities for progression at St. Leonard's.

As we have mixed-age classes in school, Year 1 to Year 4 follow a two-year rolling programme and our design and technology curriculum is organised into Cycle A and Cycle B. Our 'Long-term Curriculum Overview' outlines how we follow the Kapow Primary's Design and Technology

Scheme of Work across these two cycles. This year, **2024-2025**, we are following **CYCLE B**. Next year, **2025-2026**, we are following **CYCLE A**. In Year 5 and Year 6, our

Upper Key Stage 2 children access year appropriate units of work due to the fact they are taught as single year groups.

Activities in Design and Technology are planned so that they build upon prior learning of the children. Focused practical tasks allow children to fine-tune their skills. We give children of all abilities the opportunity to develop their skills, knowledge and understanding so that the children are increasingly challenged as they move through the school. Lessons begin with 'Attention Grabber' starters to engage pupils. In our motivating lessons you will see demonstration videos; points for discussion; IWB presentations; success criteria; key questions; relevant vocabulary; differentiation and extension activities.

Each Design and Technology project has a purpose and is for a specific user. We aim to use sustainable materials as much as possible.

Each project is reviewed, by the teachers and TAs within the year group, to ascertain the enjoyment had by the children, the effectiveness of developing skills and the quality of purpose.

Teacher support & training

Strong subject knowledge is vital for staff to be able to deliver a highly effective and robust Design and technology curriculum. Each Kapow unit of lessons includes multiple teacher videos to develop subject knowledge and support ongoing CPD. This support allows teachers to deliver lessons of a high standard that ensure pupil progression.

The subject leader's role is to support colleagues, to keep informed about current developments in the subject, and to provide a strategic lead and clear direction for the subject in the school.

Structure of Learning - Design and Technology in Early Years Foundation Stage (EYFS)

Early Years	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	**Bread plaiting:** *Children begin practising their kneading and plaiting skills as they prepare the dough for baking, before testing and evaluating the final product.*	**Seasonal Project Structures: Autumn - Hibernation Boxes** *Designing and making a hibernation box, children consider the function of a product.* **Seasonal Project Mechanisms: Sliding angels/stars** *Creating a sliding mechanism, children develop their cutting and joining skills.*	**Workshop: Junk Modelling** *Exploring materials through junk modelling, children develop their scissor skills and awareness of different materials and joining techniques. Children begin to make verbal plans and material choices before starting and problem solve while making their model.*	**Seasonal Project Easter: Hanging Egg Decoration** *Designing a hanging egg decoration, children make choices about how to decorate.*	**Seasonal Project Spring: Flower Threading** *Creating their own threading cards, children practise using scissors and a hole punch.*	**Structures: Boats** *Considering the properties of materials through water play, children discover which materials are waterproof and whether they float or sink. Children evaluate a variety of boats and use their new-found knowledge to design and make a boat that is waterproof and floats.*
Reception	**Cooking and Nutrition: Soup** *Learning about vegetables and where they come from while preparing to make a soup. Children describe the taste of a range of vegetables and design a soup recipe as a class. They practise cutting skills and prepare the vegetables for their class soup before testing the final product.*	**Workshop: Junk Modelling** *Exploring materials through junk modelling, children develop their scissor skills and awareness of different materials and joining techniques. Children begin to make verbal plans and material choices before starting and problem solve while making their model.* **Seasonal Project Mechanisms: Sliding angels/stars** *Creating a sliding mechanism, children develop their cutting and joining skills.*	**Workshop: Junk Modelling** *Exploring materials through junk modelling, children develop their scissor skills and awareness of different materials and joining techniques. Children begin to make verbal plans and material choices before starting and problem solve while making their model.*	**Textiles: Bookmarks** *Developing fine motor skills through a range of threading activities before moving on to use binka and a needle. Children design a bookmark, considering what to include and why and then follow their designs to complete their bookmarks.*	**Seasonal Project Cooking and Nutrition: Designing a rainbow salad** *Researching and designing a colourful and healthy salad.*	**Structures: Boats** *Considering the properties of materials through water play, children discover which materials are waterproof and whether they float or sink. Children evaluate a variety of boats and use their new-found knowledge to design and make a boat that is waterproof and floats.*

Design and Technology in KS1 and KS2

The Kapow scheme of learning is followed from Year 1 to Year 6.

Pupils complete three full projects each year whilst following the three main stages of the design process: design, make and evaluate. Each project consists of four lessons. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical and technical understanding, required for each strand.

Throughout the school year, class teachers may provide extra opportunities to further develop Design and Technology skills, for example, during a subject-specific focused week, stand-alone lessons (Kapow scheme) STEM challenges, competitions, cooking lessons and so on.

Structure of Learning - Design and Technology in Key Stage 1

Key Stage 1	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle A		**Structures:** Design a windmill. Assemble the structure and the windmill. Test and evaluate.		**Textiles:** Join fabrics. Design a puppet. Make, join and decorate a puppet.		**Cooking and Nutrition:** Identity fruits and vegetables. Investigate where fruits and vegetables grow, Taste smoothie ingredients. Make a smoothie. **Mechanisms:** Make a slider and explore movement.
Cycle B		**Structures:** Explore stability and strengthening materials. Make Baby Bear's chair. Fix and test Baby Bear's chair.		**Mechanisms:** Design a ferris wheel. Plan the build and build the frame and wheels. Add pods and decoration.		**Mechanisms:** Explore pivots, levers and linkages. Make linkages. Design and make a monster. **Cooking and Nutrition:** Investigate hidden sugars in drinks.

Structure of Learning - Design and Technology in Lower Key Stage 2

Lower Key Stage 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle A		**Cooking and Nutrition:** Know that climate affects food growth, Understand the advantages of eating seasonal foods grown in the UK. Create a recipe that is healthy and nutritious using seasonal vegetables. Safely follow a recipe when cooking. **Textiles:** Learn how to sew cross-stitch and appliqué.		**Digital world:** Understand the impact of the digital revolution in the world of (D&T) product design. Write a program to initiate a flashing LED panel after button press and/or automatically initiate using the Micro:bit light sensing, as part of an eCharm. Create and decorate a foam pouch for the eCharm, using a template. Design a display badge and/or stand using CAD (computer-aided design) software for an eCharm product. **Mechanical systems:** Understand how pneumatic systems work		**Structures:** Look at features of a castle. Design a castle. Construct 3D nets. Construct and evaluate a final product. **Mechanical systems:** To design a toy that uses a pneumatic system.
Cycle B		**Structure:** Explore frame structures. Design a pavilion structure. Build a frame structure and add cladding. **Cooking and Nutrition:** Follow a baking recipe.		**Mechanical systems:** Build a car chassis. Design a shape that reduces air resistance. MAke a model based on a chosen design. Assemble and test the product. **Textiles:** Identify and evaluate different types of fastenings. Explain the advantages and disadvantages of each fastening type.		**Electrical systems:** Learn about electrical items and how they work. Analyse and evaluate electrical products. Design a product to fit a set of specific user needs. Make and evaluate a torch.

Structure of Learning - Design and Technology in Year 5 and Year 6

Upper Key Stage 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 5		**Electrical systems: Doodlers** Understand how motors are used in electrical products. Investigate an existing product to determine the factors that affect the product's form and function. Put findings from research into practice to develop an improved product. develop a DIY kit for another individual to assemble their product.		**Mechanical systems:** Design a pop-up book. Use layers and spacers to cover the working of mechanisms. Create a high-quality product suitable for a target user.		**Cooking and Nutrition:** Understand where food comes from. Understand the term 'healthy'. Adapt a traditional recipe. Complete a food product.
Year 6		**Textiles:** Design a waistcoat or Christmas stocking. Mark and cut fabric according to a design. Assemble and decorate.		**Structure:** Design a playground with a variety of structures. Build a range of structures. Improve and add detail to structures. Create the surrounding landscape.		**Digital world:** Write a design brief and criteria based on a client request. Write a program to include multiple functions as part of a navigation device. Develop a sustainable product concept. develop 3D CAD skills to produce a virtual model. Present a pitch to 'sell' the product to a specified client. **Cooking and Nutrition:** Come Dine with Me! Follow a recipe, including using the correct quantities of each ingredient.

Key events and individuals in design and technology who have helped shape the world

We are committed to delivering a high-quality curriculum which engages and inspires all. In design and technology, we give children the opportunity to find out about key events and individuals in design and technology who have helped shape the world. Children will research, learn about and be inspired by engineers, designers, chefs and architects (past and present) who have solved real-life problems. Our aim is to build an awareness of the impact of design and technology on our lives and equip children with the skills to contribute to future design advancements in our rapidly changing world.

Assessment

The impact of Kapow Primary's scheme is constantly monitored through both formative and summative assessment opportunities. Assessment takes place regularly and teachers assess work in Design and Technology by making observations of the children working during lessons.

Teachers use the Kapow assessment checklists within each lesson and adjust planning accordingly to understand and meet the needs of the pupils in their class. Assessment quizzes and knowledge captures are used both at the start and at the end of each unit to assess progress. The subject leader and class teachers track pupil progress using the Kapow 'D&T Progression of skills and knowledge'.

The expected impact of our Design and Technology Curriculum is that children will:

- Understand the functional and aesthetic properties of a range of materials and resources.
- Understand how to use and combine tools to carry out different processes for shaping, decorating and manufacturing products.

- Build and apply a repertoire of skills, knowledge and understanding to produce high quality, innovative outcomes, including models, prototypes, CAD, and products to fulfil the needs of users, clients and scenarios.
- Understand and apply the principles of healthy eating, diets and recipes including key processes, food groups and cooking equipment.
- Have an appreciation for key individuals, inventions, and events in history and of today that impact our world.
- Recognise where our decisions can impact the wider world in terms of community, social and environmental issues.

- Self-evaluate and reflect on learning at different stages and identify areas to improve.
- Meet the end of key stage expectations outlined in the National Curriculum for Design and Technology.

Monitoring

Evidence of the children's work can be found in their individual portfolios. Due to the practical nature of design and technology, some work undertaken by children can also be in the form of photographs which show the design process (including making and final product).

The subject leader is responsible for monitoring work and sharing findings with relevant members of staff to improve the teaching and learning in design and technology at St. Leonard's.

Additional opportunities

- Subject Ambassadors for design and technology
- cooking and nutrition lessons

- worship, visitors (workshops) and themed weeks (e.g. ACE week)
- cross-curricular opportunities (e.g. STEM challenges)
- educational visits
- displays around the school environment
- competitions
- extra-curricular clubs (e.g. Craft Club)

Impact

Our school has a supportive ethos and our approaches support the children in developing their collaborative and independent skills, as well as empathy and the need to recognise the achievement of others.

Our Design and Technology curriculum is high quality, well thought out and is planned to demonstrate progression. The Kapow Primary's Design and Technology Scheme is engaging and motivating with diverse and inclusive resources. It provides teachers with 'Attention Grabber' starters; pupil and teacher demonstration videos; points for discussion; IWB presentations; success criteria; key questions; relevant vocabulary; differentiation and extension activities.

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- Self-evaluate and reflect on learning at different stages and identify areas to improve.
- Meet the end of key stage expectations outlined in the National Curriculum for Design and Technology.

At St. Leonard's, we pride ourselves on our strong relationships with parents, carers and members of our local community. Wherever possible, children showcase their learning. Our children have a sense of pride and achievement in their real, relevant and appealing products.

We measure the impact of our curriculum through the following methods:
▪ A reflection on standards achieved against the planned outcomes;
▪ A celebration of learning;
▪ Pupil discussions about their learning; which includes discussion of their thoughts, ideas, processing and evaluations of work.

It is our aim that pupils should leave school equipped with a range of skills to enable them to succeed in their secondary education and be innovative and resourceful members of society.

Resources

Design and technology teaching resources are provided within the Kapow scheme of learning and can be enhanced with resources chosen by staff based on the needs of the children in class.

Materials and tools are centrally-stored to ensure that all children have the necessary resources to access the subject and to make informed choices. Consumables are ordered, purchased and replenished when required. Ingredients needed for cooking-based units are ordered through the school kitchen. We promote sustainability and reuse, reduce and recycle a wide range of material wherever possible.

Food Hygiene and Safety Issues

We enable pupils to have access to the full range of activities involved in learning design and technology. Where children are to participate in activities outside the classroom, for example in a museum or on a factory trip, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils. Teachers teach the safe use of tools and equipment and insist on good practice prior to starting the making part of a task. However, safety issues do arise when teaching this subject. These include:

- The use of electrical equipment such as glue guns
- The handling of food stuffs
- The use of cooking appliances, including ovens and hobs
- Contact with sharp objects including wood, nails, needles, saws, knives etc.

- Awareness of personal safety (jewellery, hair, eye protection)

It is the duty of all staff to:

- Recognise and assess the hazards and risks to themselves and others when working with food and other materials
- Take action to control these risks and hazards

Teachers should be aware of the following:

- Children must not use cooking appliances unless under direct supervision from a responsible adult.
- Saws and other sharp objects (nails, needles, craft knives, etc) must be used under direct supervision. The teacher will make a judgement on the undertaking of activities involving sharp and/or potentially dangerous equipment depending on the age/ability of the children in his/her class. Some activities may be undertaken by an adult or in a small group or one to one situation as appropriate.
- Perishable foodstuff must be stored sensibly and refrigerated if necessary. Care must be taken to ensure food is not used after the given sell by date.
- Teachers and adult support staff must oversee that cupboards, table tops, cooker etc, are clean and in working order.
- Children must wash their hands before and after any contact with food and other potentially harmful substances.
- Teachers must take into account possible food allergies to food such as nuts and should be aware of the location of any medication for the allergy.
- Children should be taught to recognise and consider hazards and risks and to take action to control these risks, having followed simple instructions.