Sedlescombe Church of England Primary School

Design & Technology Policy 2020 – 2023

Adopted	January 2021
Review Cycle	Three Years
Review Date	Academic Year 2022-2023

Sedlescombe Vision and Values

Motto:

Learning, Loving and Growing Together with God

Values:

Aspiration	**Honesty**	**Forgiveness**
Courage	**Thankfulness**	**Kindness**

Vision:

Our school is a family with God at its heart.
Christian values guide and inform all that we do.

We aim to:

- **Provide a welcoming, safe and nurturing environment where everyone is able to learn and grow as a unique individual.**
- **Encourage and support each other to be ambitious, resilient and independent lifelong learners.**
- **Develop enquiring minds and a love of learning.**
- **Value everyone and celebrate their beliefs, achievements, skills and contributions.**
- **Provide a curriculum that is creative, exciting, challenging and takes learning beyond the classroom.**
- **Reach the highest standards in achievement and attainment.**
- **Create a learning community where everyone is nurtured and challenged to develop academically, personally, morally and spiritually.**
- **Support each other to develop the skills, attitudes and values to grow into responsible members of our global community and God's world.**

INTRODUCTION

Design and technology gives young people the skills and abilities to engage positively with the designed and made world and to harness the benefits of technology. They learn how products and systems are designed and manufactured, how to be innovative and to make creative use of a variety of resources including digital technologies, to improve the world around them.

As the patron of the D&T Association, James Dyson states:
"Design and technology is a phenomenally important subject. Logical, creative and practical, it's the only opportunity students have to apply what they learn in maths and science - directly preparing them for a career in engineering. Policy-makers must recognise design and technology's significance for the UK economy and strive not just to preserve it – but to ensure it appeals to the brightest of young minds."

INTENT

D&T Vision Statement

At Sedlescombe Church of England Primary School it is our vision that D&T will be an inspiring, rigorous and practical subject that supports children to develop our key learning behaviours and skills for life.

Aspiration
D&T will encourage all children to be aspirational learners by giving them real and relevant problems to solve that will make a difference to others. Children will be encouraged to be aspirational by finding the best design solution to the problem and having a positive impact on the lives of others.

Creativity
D&T will encourage and provide opportunities for children to be creative and imaginative learners designing and making products that solve real and relevant problems, considering their own and others' needs wants and values.

Curiosity
D&T will encourage children to think about important issues and how design can be used to solve problems. Children will be encouraged to be curious learners developing new skills and knowledge in design, structures, mechanisms, electrical control and a range of materials including food. Children will be encouraged to be curious so that they can find the best ways to solve design problems and meet design briefs.

Courage
Children will learn that mistakes will be made in the design process and improvements will need to be made. Learning that it is OK to make mistakes is integral to learning. D&T will also provide children with opportunities to be risk takers.

Cooperation
In D&T the children will be given opportunities to work as part of a design team, sharing ideas and evaluating which ones will support the team to meet the design brief in the best and most

creative way. Cooperation and listening skills will be essential skills for the design team to work effectively.

Independence
In D&T the children will undertake a food technology project once a year and in addition to this they will undertake one additional food project each year. The children will learn cooking skills which is an essential life skill and will support children to be independent. Children will also be taught to select and use appropriate tools safely and effectively to make a product.

Curriculum Aims

The National Curriculum 2014 for Design & Technology (D&T) 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.

Objectives:

In Key Stage 1 when designing and making, pupils should be taught to:

- 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
- 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
- Explore and evaluate a range of existing products
- Evaluate their ideas and products against design criteria
- Build structures, exploring how they can be made stronger, stiffer and more stable
- Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products
- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from

In Key Stage 2 when designing and making, pupils should be taught to:

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in design and technology have helped shape the world
- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- Apply their understanding of computing to program, monitor and control their products
- Understand and apply the principles of a healthy and varied diet
- Prepare and cook a variety of 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.

IMPLEMENTATION

Design & Technology Principles

It is important to check that the D&T being taught is genuine D&T, particularly when linking it to cross-curricular topics as we do at our school. For this reason at Sedlescombe Church of England Primary School we follow the principles of the D&T Association. Here is a memorable definition of D&T to assess whether a project is genuine D&T:

Design and making:

- **Something for**
- **Somebody for**
- **Some purpose**

To be genuine D&T the project being taught needs to have certain key ingredients. A summary of these is given in the Minimum Requirements Checklist in Appendix 1.

User – who the products are for
Children should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or a specific target group.

Purpose – what tasks the product will perform
Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.

Functionality – how the product will work
Children should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes. In D&T, it is insufficient for children to design and make products which are purely aesthetic.

Design Decisions – opportunities to make choices
Children need opportunities to make their own design decisions. Making design decisions allows children to demonstrate their creative, technical and practical expertise, and use learning from other subjects. When making design decisions children decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.

Innovation – the chance for original thinking
When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.

Authenticity – how believable/real the products will be to the children
Pupils should design and make products that are believable, real and meaningful to themselves and others.

In addition to securing the D&T principles, it is important to check that other key aspects of teaching and learning are in place such as the development of knowledge, understanding and skills through the evaluation of existing products and focused tasks.

Design & Technology Planning Cycle

At Sedlescombe Church of England Primary School we follow the D&T Association approach to planning units of work for D&T. Therefore each year the children must complete a minimum of three D&T projects with an allocation of between 8 to 12 hours per unit. In addition to this to fit with our school vision we have made a commitment to include additional food projects which culminates in the children in Year 5 cooking for Dom's Food Mission.

In Key Stage 1 the children will be taught:

Year 1		
Mechanisms Sliders and Levers **(Moving Pictures)**	**Structures** Freestanding structures **(Whose House?)**	**Food** Preparing fruit and vegetables (KS1 cooking & nutrition requirements) **(Fantastic Fruit – Healthy Breakfasts)**
Year 2		
Mechanisms Wheels and Axles	**Textiles** Templates and Joining Techniques	**Food** Preparing fruit and vegetables (KS1cooking & nutrition requirements)

In Key Stage 2 children will be taught:

Year 3		
Textiles 2D shape to 3D product **(Bendy Bags)**	**Food** Healthy and varied diet (including cooking & nutrition requirements for KS2) **(Sandwich Snacks & Dips and Dippers)**	**Structures** Shell structures (including computer aided design) **(Desk Tidy)**
Year 4		
Mechanical Systems Levers and linkages **Historical Moving Books Mighty Mascots – Sea Monsters (pneumatics) Pop-up Poster Save the oceans**	**Electrical Systems** Simple circuits and switches (including programming and control)	**Food** Healthy and varied diet (KS2 cooking & nutrition requirements)
Year 5		
Mechanical Systems Pulley or gears	**Electrical Systems** More complex switches and circuits (including programming, monitoring and control)	**Food** Celebrating culture and seasonality (KS2 cooking & nutrition requirements)
Year 6		
Structures Frame structures	**Textiles** Combining different fabric shapes (including computer aided design)	**Food** Celebrating culture and seasonality (KS2 cooking & nutrition requirements)

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 1	Enchanted Woodland	Memory Box	Moon Zoom!	Dinosaur Planet	Splendid Skies	Bright Lights, Big City
		Whose House? Structures Freestanding structures	**Moving Pictures** Mechanisms Sliders and Levers		**Fantastic Fruit – Healthy Breakfasts** Food Preparing fruit and vegetables	
Year 2	Street Detectives	Towers, Tunnels and Turrets	Muck, Mess and Mixtures	Wriggle and Crawl	Beat Band Boogie!	Land Ahoy!
	Vehicle for Mayor Mechanisms Wheels and Axles		**Fruit Drinks / Smoothies** Food Preparing fruit and vegetables			**Teddy's safety Jacket** Textiles Templates and Joining Techniques
Year 3	Predator	Gods and Mortals	Mighty Metals	Scrumdiddly-umptious	Tremors	Flow
	Bendy Bags Textiles 2D shape to 3D product			**Super Salads/ Dips & Dippers** Food Healthy and varied diet		**Desk Tidy** Structures Shell structures (including CAD)

Year 4	**I am Warrior**	**Burps, Bottom and Bile**	**Traders and Raiders**	**Blue Abyss**	**1066**	**Misty Mountain Sierra**
		Bread Making Food Healthy and varied diet	**Night Lights** Electrical Systems Simple circuits and switches (including programming and control)	**Mighty Mascots** Mechanical Systems Levers and linkages (pneumatics) Save the Oceans Mascot		
Year 5	**Peasants, Princes & Pestilence**	**Stargazers**	**Pharaohs**	**Scream Machine**	**Allotment**	**Time Traveller**
		Alarming Vehicles Crumble Controllers Electrical Systems More complex switches and circuits		**Fairground** Mechanical Systems Pulley or gears	**Soups** Food Celebrating culture and seasonality	
Year 6	**Hola Mexico!**	**Frozen Kingdom**	**Blood Heart**	**Tomorrow's World**	**A Child's War**	**Darwin's Delights**
	Fruit Cocktails Food Celebrating culture and seasonality				**Designer Bags** Textiles Combining different fabric shapes	**Bird Hides** Structures Frame structures

When planning a D&T unit of work there are three types of activity that contribute to D&T which are reflected in the National Curriculum requirements. These three activities are there to ensure that the children are taught the necessary knowledge, understanding and skills needed to engage effectively in the process of designing and making. These three activities are explained in more detail below:

Investigative and Evaluative Activities (IEA)

These activities are designed to give children the opportunity to investigate and analyse and evaluate existing products that contain the same design tool that the children are going to be using in their design project. For example if the children are covering mechanical systems and learning about levers and linkages they will look at products that use a range of levers and linkage mechanism to generate ideas and begin to assess what works well and what might be useful to use in their own design task.

Some key questions that might be asked are:

- What is this product's purpose?
- How well does it achieve its purpose?
- What part moves and how does it move?
- What materials have been used and how effective are they?
- How effective is this product and could it be improved further?

Focused Tasks (FT)

In this phase of the design and making process the children are taught the skills and knowledge that they will need to design and make their chosen product. It is the phase of learning in which the children develop their key knowledge and begin to learn and use technical vocabulary. The teacher prepares learning tasks that will teach the children about the area of D&T they are covering. For example in a unit of work on levers and linkages the children would be shown a range of lever and linkage mechanisms and carry out practical tasks to learn how to use and make them. This could include demonstrating correct and accurate use of measuring, marking out, cutting and joining. In addition to this, children might learn to distinguish between fixed and loose pivots and it what situation each is the best to use.

Design, Make and Evaluate Assignment (DMEA)

In this phase of the design cycle the children will be given a design brief that has an authentic and meaningful context. The children need to be clear on the purpose of the product and who the product is for as well as having a clear design criteria and knowledge of how the product will be evaluated.

The children will then generate their idea and communicate this through the use of annotated sketches, prototypes and models. The children will need to reflect on their learning from the IEAs and FTs. They should then consider the main making stages before assembling a high quality product.

Once the children have made their product they should evaluate the final product against the intended purpose and the intended user, thinking about the design criteria agreed at the start of the DMEA process. The children may also want to consider what they would change or improve if they were to repeat the process.

Projects on a Page

To support teachers with planning authentic and meaningful D&T projects teachers have access to the D&T Association resource 'Projects on a Page' which cover all of the key learning areas and ensure that the National Curriculum requirements are fully met. The 'Projects on a Page' resources have been used to create our Scheme of Work for D&T. An example of a project is given in Appendix 2.

All of the children's work will be recorded in their D&T Learning Journals which will move through the school with the children. This is important because for skills and knowledge to become embedded they need to be revisited. By having a book which goes through the school with them the children's progress over time can be recorded. This will also support teachers to make accurate summative assessment judgements at the end of Year 2, Year 4 and Year 6.

Children can take their finished products home, but photographs of the finished product must be included with the children's D&T Learning Journals.

Special Educational Needs and Disabilities

As a school we are committed to providing all children with learning opportunities to engage in Design Technology. DT is accessible to all children and opportunities are provided to develop the aesthetic and creative potential of every child, regardless of gender, ethnic origin, social and cultural background, religion or disability. Through a wide range of purposeful activities, every child will be encouraged to explore a range of mediums and experiences. Teaching strategies will take into account the individual needs of every child and children with SEN will be supported, where appropriate, with differentiated materials and tasks.

It may be necessary to make adjustments to enable all children to access the curriculum and be successful learners in DT. These might include providing specialist equipment such as loop scissors, adapted rulers, writing slopes, adapting room layouts, utilising adult support and allowing additional time for tasks. Pupils with SEND often find designing activities problematic. A variety of recording methods need to be offered to ensure pupils can access and produce successful initial design work. Some children may require one-one support during physical making tasks, but it is important to encourage working independently. Children could be supported with developing independence by using key word mats, flow charts and visual instruction sheets.

Designing and making usable products gives children a real sense of achievement. They benefit from experiencing their own progress and taking responsibility for their own learning.

Equal Opportunities

Even very young children often adopt stereotypical attitudes in D&T. Teachers will need to adopt a range of approaches to counter this. These may include single or mixed sex groupings, choice of subject, material or activity and the provision for adults other than teachers to work with the pupils.

Health and Safety

It is essential that class teachers ensure the health and safety of children at all times. Learning in D&T lessons does have some risks attached due to the nature of the materials and tools the children may need to use to complete a design task. Therefore, when working in D&T there needs to be:

- Careful selection of materials and equipment to ensure that it is appropriate to the age of the children and that there are appropriate supervision levels.
- Consideration given to the organisation of work area within the classroom to ensure that children can complete tasks with enough space and without endangering each other.
- Clear demonstration of techniques and safe practice which is the basis of good health and safety practice.
- A curriculum risk assessment completed.

Additional support and advice on using equipment safely within D&T lessons can be found on the CLEAPPS website. The link to the website is given below. An example of advice available is given in Appendix 3.

http://primary.cleapss.org.uk/Resources/Doing-Things-Safely/Equipment/

Health and Safety in Food Lessons
The following guidance should be followed when doing food based activities with children in school.

Ensure that:

- A letter has been sent home to check whether any children have food allergies, special dietary requirements, religious or cultural beliefs that prevent them handling or tasting certain foods
- Furniture in the kitchen is in a safe, practical arrangement
- Equipment is clean and ready for use (count knives and sharp tools out and in)
- Ingredients are stored appropriately, e.g. in a fridge below 5C. Ingredients containing allergens, are stored separately
- Ingredients are ready for use – if necessary, some may be partly prepared or weighed
- All jewellery is removed e.g. watches
- Children are not wearing nail varnish
- Long hair is tied back
- Jumpers are removed (if appropriate) and long sleeves rolled up
- Hands are clean – washed with soap and dried properly using paper towels
- Aprons are being worn
- Children know they must wash their hands again if they blow their nose, cough or sneeze into their hands, touch hair, cuts or spots
- Children know they must remove their apron if they go to the toilet; wash their hands in the toilet sink when they have used the toilet and re-wash in the classroom sink before they go back to their cooking
- Children know how to use the equipment safely (teacher to demonstrate)
- Adults act as role-models for good food hygiene and safety practices.

IMPACT

Assessment Recording and Reporting

Formative Assessment
Formative assessment should be used within lessons to assess children's understanding and to adapt and change teaching to meet the needs of the children in the class. Each class is different, and the children will have different interests and experiences that will impact on their learning. It is important to reflect on these when planning projects.

Formative assessment will also inform the skills and knowledge that need to be developed in subsequent D&T teaching to ensure that gaps in knowledge and skills are addressed and children make progress over time.

Summative Assessment

It is important to track children's progress and attainment against the National Curriculum objectives. Children's attainment is formally tracked at the end of Year 2, Year 4 and Year 6 against the assessment criteria for Designing, Making, Evaluating, Technical Knowledge and Cooking and Nutrition. Children will be judged as Emerging, Expected or Exceeding each assessment criteria. The assessment criteria and given in Appendix 4.

This summative assessment will build up a profile of the strengths and areas to develop for each child as they progress through the school. This developing profile can be used to inform planning and teaching and to offer children additional support and challenge they need in their next project.

The assessment criteria will need to be assessed over a number of projects and using different contexts.

Monitoring

Monitoring will be undertaken by Subject Leaders in line with the Subject Leadership Policy and where the subject is in the review cycle.

In addition to this in D&T the Subject Leader will monitor outcomes and teaching and learning in D&T in the following ways.

At the end of a unit of work the Subject Leader will meet with a small group of children at different stages of development to discuss their end product and their learning. The Subject Leader will use the Scheme of Work to assess children's understanding of the key learning and vocabulary and will then will feedback to the class teacher on the aspects that have been developed well within the project as shown by the children's understanding and what changes could be made to the project next time to enhance children's learning. This feedback is developmental and will support all teachers to provide high quality D&T projects and teaching.

In addition to this for children in Year 2, Year 4 and Year 6 the Subject Leader will look at books and products to moderate the teachers' summative assessment judgements.