St Benedict's Design and Technology Policy

Policy Aims

This policy should be read in conjunction with St Benedict's Teaching, Learning and Assessment Policy and the Design and Technology Progression Map.

This Design and Technology Policy focuses on the details of our Design and Technology curriculum:

- Intent: What is our vision for Design and Technology?
- Implementation: How do we organise and deliver our Design and Technology Curriculum?
- Impact: How do we know our Design and Technology Curriculum is successful?

This policy promotes best practice and establishes consistency in Design and Technology across the whole school. It aims to ensure that all children are provided with high quality learning experiences that lead to a consistently high level of pupil achievement and attitude.
Article 29 of the UN Children's Rights states,
'Education must develop every child's personality, talents and abilities to the full.'

Part 1: Intent
What is our vision for Design and Technology?

The starting point for our curriculum at St. Benedict's Primary School is our children. Language and literacy are at the heart of our curriculum and is the basis from which all other subjects evolve. We therefore aim to develop the children's scientific skills and knowledge through a connected and language-rich curriculum.

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.

Design and Technology at St Benedict's Primary school enables children of all abilities to express creativity, problem solving and practical skills within a range of subject disciplines. Children will build upon prior knowledge, skills and experiences and acquire new skills and attributes and apply them both independently and collaboratively in a range of contexts. Design and Technology will equip children with the necessary skills to meet their own needs in an evolving world.

We aim for our children to be; successful learners, responsible and rights respecting citizens and confident individuals.

The overarching aims for Design and Technology in the national curriculum are:

- 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.

Part 2 Implementation

How do we organise and deliver our Design and Technology Curriculum?

Our Design and Technology Curriculum is organised across the year as follows:

	Autumn	Spring	Summer
Year 1	**Shade and Shelter** Designing and making shelters and dens	**Taxi** Mechanisms – wheels, axles and chassis	**Chop, slice and mash** Designing and making salads and sandwiches
Year 2	**Remarkable Recipes** Following recipes safely	**Beach hut** Structures – strengthening and joining	**Cut, stitch and join** Everyday fabric products
Year 3	**Cook well, eat well** Designing and making Taco fillings	**Making it move** Cam mechanisms	**Greenhouse** Features and construction of greenhouses
Year 4	**Fresh Food, good Food** Food preservation techniques	**Functional and Fancy Fabrics** Motifs and pattern, block printing, embroidery	**Tomb builders** Simple and compound machines
Year 5	**Moving mechanisms** Pneumatic systems	**Eat the seasons** **Cooking and nutrition**	**Architecture** Architecture over time, CAD, building design
Year 6	**Food for life** Whole foods and processed foods	**Engineer** Significant engineers and bridges	**Make do and mend** Investigating clothing

Why do we teach it in this order?

The design and technology projects are well sequenced to provide a coherent subject scheme that develops children's designing, planning, making and evaluating skills. Each project is based around a design and technology subject focus of structures, mechanisms, cooking and nutrition or textiles. The design and technology curriculum's electronic systems and IT monitoring and control elements are explicitly taught in our science projects to ensure the links between the subjects are highlighted.

Where possible, meaningful links to other areas of the curriculum have been made. For example, the cooking and nutrition project *Eat the Seasons* is taught alongside the geography project S*ow, Grow and Farm*. All the projects follow a structure where children are introduced to key concepts and build up knowledge and skills over time, using a more comprehensive range of equipment and building, cutting, joining, finishing and cooking techniques as they progress through school.

All projects contain focused, practical tasks in the Develop stage to help children gain the knowledge and skills needed to complete their Innovate tasks independently. Throughout Key Stages 1 and 2, children build up their knowledge and understanding of the iterative design process. They design, make, test and evaluate their products to match specific design criteria and ensure they fit their purpose. Throughout the projects, children are taught to work hygienically and safely.

Throughout the design and technology scheme, there is complete coverage of all national curriculum programmes of study.

Year 1

In the autumn term of Year 1, children begin to learn about structures in the project *Shade and Shelter* before designing and making a shelter. In the spring term project *Taxi!*, they learn the term 'mechanism' and assemble and test wheels and axles. In the summer term, children begin to learn about food sources in the project *Chop, Slice and Mash* and use simple preparation techniques to create a supermarket sandwich.

Year 2

In the autumn term of Year 2, children learn more about food in the project *Remarkable Recipes*, where they find out about food sources, follow recipes and learn simple cooking techniques. In the spring term project *Beach Hut*, children develop their knowledge of structures further, learning to cut, join and strengthen wood for the first time. In the summer term, children begin to develop their understanding of textiles in *Cut, Stitch and Join*. They learn to sew a simple running stitch, use pattern pieces and add simple embellishments.

Year 3

In the autumn term of Year 3, children continue to learn about food, understanding the concept of a balanced diet and making healthy meals in the project *Cook Well, Eatwell*. In the spring term project *Making it Move*, children extend their understanding of mechanisms by exploring cams and using joining and finishing techniques to make automaton toys. In the summer term project *Greenhouse*, they continue to develop their knowledge of structures, using triangles and braces for strength. They design and build a greenhouse, using their understanding of opacity and transparency and the needs of plants from science learning to inform their design.

Year 4

In the autumn term of Year 4, children continue to develop their understanding of food in the project *Fresh Food, Good Food*. They learn about food safety and preservation technologies before designing and making packaging for a healthy snack. During the spring term project *Functional and Fancy Fabrics*, children continue to explore textiles, learning about the work of William Morris before designing, embellishing and finishing a fabric sample. In the summer term project *Tomb Builders*, they build on their knowledge of mechanisms, learning about six simple machines and using their knowledge to create a lifting or moving device prototype.

Year 5

In the autumn term of Year 5, children deepen their understanding of mechanisms by studying pneumatic systems in the project *Moving Mechanisms*. They learn about the forces at play and create a prototype for a functional, pneumatic machine. In the spring term project *Eat the Seasons*, children continue to explore food and nutrition, learning about seasonal foods and the benefits of eating seasonally. In the summer term, they learn more about structures in the project *Architecture*, studying the history of architecture and developing new ways to create structural strength and stability. They use computer-aided design and consolidate their making skills to produce scale models. They also explore the electrical conductivity of materials before making products incorporating circuits in the science project *Properties and Changes of Materials*.

Year 6

In the autumn term of Year 6, children learn about processed and whole foods in the project *Food for Life*, creating healthy menus from unprocessed foods. In the spring term project *Engineer*, children consolidate their knowledge of structures, joining and strengthening techniques and electrical systems by completing a bridge-building challenge. In the summer term project *Make Do and Mend*, they extend their knowledge of textiles by learning new stitches to join fabrics and using pattern pieces to create a range of products.

Throughout the Design and Technology scheme, there is complete coverage of all national curriculum programmes of study.

Planning and Preparation

Medium-Term Planning is based on the Cornerstones Maestro. Each unit of work is structured around the 'Four Cornerstones'

Engage

- 'Hooks' learners in with a memorable experience.
- Sets the scene and provide the context for learning.
- Asks questions to find out children's interests.

Develop

- Teaching facts and information for deeper understanding and knowledge.
- Demonstrate new skills and allow time for consolidation.
- Provide creative opportunities for making and doing.

Innovate

- Imaginative scenarios that encourage creative thinking.
- Enables children to apply previously learned skills.
- Encourages enterprise and independent thinking.

Express

- The environment for reflective talk.
- Creates opportunities for shared evaluation.
- Celebrates and share children's success.
- Identifies next steps for learning.

Year groups plan collaboratively and in advance so that resources are shared and time is well-managed.

By being well-prepared for lessons (secure subject specific knowledge and planning the means of delivery and participation) teachers are able to free up Working Memory and focus more ***perceptively*** and ***attentively*** on pupils.

Teacher preparation should focus on:

- **Exemplar answers**

What will the answers be to the questions? What will an exemplary answer look like? Debating this prior to lessons is excellent professional development and frees up space in the working memory during lessons.

- **Misconceptions**

What errors are pupils most likely to make? How can these be overcome?

- **Means of Participation**

How will pupils be engaged?

How long will be spent on each segment?

How will pupils understand the links between each section of the lesson? (Segues)

- **Sharing or Co-constructing Learning Objectives and Success Criteria**

A skill or knowledge-based objective needs to be clear and built into the plan.

This should be a generic objective, rather than just specific to the lesson so that the knowledge and skills are transferable. Co-constructing the Success Criteria with pupils gives them

ownership of their learning. The Learning Objective and Success criteria should provide the basis of feedback given.

Lesson Structure and Pace

Our curriculum aims for a mastery of ***deep knowledge***. New or abstract concepts will need to be explicitly taught through concrete examples and representations. Pupils then need time to practise this and apply it to other examples so the knowledge is transferred.

Lesson structures will vary depending on the subject knowledge and skills being taught. Typically, Design and Technology lessons will include the following elements:

Practical exploration, observation and investigation

Pupils use practical resources to observe or explore a concept or phenomena.
Appropriate to their age, they are taught key skills in order to observe, predict, record, investigate, evaluate and draw conclusions.

Instructional teaching:

- I do - teachers explicitly teach and model or represent a new concept. Pupils will observe or may be asked to take notes. Pupils are not asked questions at this point in the lesson.
- We do - teachers engage pupils in reviewing knowledge together. Teachers may demonstrate tackling a new problem and draw on pupils to identify similarities in methods or concepts.
- You do - pupils are asked to independently tackle problems or tasks and then they are reviewed. 'Show me' is used frequently here. This point of a lesson is crucial for assessing pupils' initial understanding and determining what level of support or challenge is required.

Teachers ensure quality time is spent on clear instructional teaching, especially when introducing new or complex concepts.

Independent Learning

All pupils must have work that they can independently access. Pupils with SEND or EAL are provided relevant resources to support them and may require some additional support. However, it is essential that this support does not prevent them from working independently.
Teachers will spend this time, either with a small group, that they have planned to work with, or circulating the room. This allows teachers to gauge misconceptions that will either be addressed with individuals, groups or the class, within the same lesson, or the next lesson.

Retrieval Practice

Prior learning is frequently revisited in subsequent lessons. Pupils will revisit learning from either the week or unit before, or more complex questions asking pupils to apply prior learning. The format of these will vary, depending on the content of lessons.
Knowledge Organisers are shared with pupils and parents and are used to help pupils remember key information.
At the end of each unit, pupils complete a short quiz, which provides the opportunity for pupils to remember information and for teachers to assess what pupils have learnt.

The Learning Environment

The Design and Technology Working wall must be in line with standards set out in the Teaching, Learning and Assessment Policy.
It must be accessible and purposeful and contains:

- What are we currently learning?
- Relevant information to support pupils learning
- Steps to Success and modelled examples
- Examples of good practice taken from children's books

Presentation of Learning

Pupils learning is kept in their Design and Technology Folders. The expectations for these should be in line with the Teaching, Learning and Assessment Policy.

Roles and responsibilities

Design and Technology Leaders are responsible for ensuring day to day high standards and consistency within Design and Technology and providing support and development opportunities where required.
Class teachers are responsible for implementing the Design and Technology Policy within their own classrooms, engaging in CPD offered and identifying and developing areas of their own practice to ensure consistently high standards. Wilmington suggests that 'Teaching, like any complex cognitive skill, must be practised to be improved.'

Part 3: Impact

How do we know that our Design and Technology Curriculum is successful?

Our Progression Map details the end points for pupils knowledge and skills and the steps we expect pupils to take to reach them. It is split into separate aspects of Design and Technology e.g. Investigation.

Formative Assessment (for Learning)

Teachers deploy a range of strategies to assess learning and to provide feedback during lessons in line with our Teaching, Learning and Assessment Policy. These include listening to, and observing Talk Partners, Show Me, Cold Call and Show Call.
It is essential to give pupils time to explore practically and to carefully craft discussions in order to identify misconceptions.
Pupils are given time to self and peer assess and are given either individual, group or whole class feedback. Pupils are given time to respond to feedback with green pens.

Summative Assessment (of Learning)

Summative assessments are made in 2 main ways:

- **Test-based assessments**: each unit of work has matching quizzes which pupils complete. Teachers can use these as both retrieval practice and to inform their teacher assessment.
- **Descriptor-based assessments**: work is measured against descriptive statements of progress and recorded on FROG.

This is completed at the end of each unit of work.

Monitoring and Evaluation

Monitoring activities include:

- Pupil voice
- Staff voice
- Book Looks
- Learning walks

Assessment data, alongside feedback from monitoring activities, is evaluated to ensure this policy is implemented consistently and effectively. Outcomes of this are shared with Governors and quality assured on Governance visits.