

# Design and Technology Subject Rationale

## Our Vision

### LOVE, LEARN, SHINE.

*SHINE in the light and love of God.*

#### LOVE

We nurture each individual to be happy, healthy and safe, build positive and respectful relationships with others valuing their uniqueness and including everyone.

#### LEARN

We inspire children to a lifelong love of learning, to develop wisdom, knowledge and skills and be fluent, confident learners who are well prepared for life in a diverse world.

#### SHINE

We support children to grow and develop socially, emotionally, physically and spiritually, helping them to shine and share their light enabling themselves and others to flourish.

*'People do not light a lamp and cover it with a bowl or put it under the bed. Instead they put it on a lampstand, so that people will see the light as they come in'.*

Luke 8 V16.

## Vision into Curriculum

### ***Our vision translates directly into our curriculum in that;***

Our curriculum promotes a love and appreciation of life and learning enabling children to *SHINE*, realise a passion for what is possible and enjoy life in all its fullness

## National Curriculum Aims and Purpose

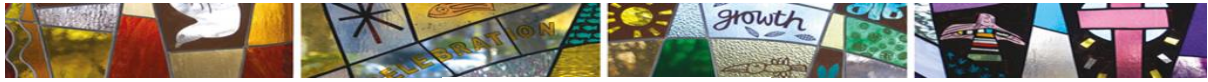
A well planned and effectively implemented curriculum begins with a sound and secure knowledge of the National Curriculum purpose and aims for the subject.

In Design and Technology, they are:

### **National Curriculum Purpose**

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.

### **National Curriculum Aims**

- 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.

### **Quality First Curriculum Implementation in Design and Technology**

Quality first curriculum implementation in design and technology supports children in becoming secure, and fluent in the identified agreed core knowledge and skills in design and technology. Fluency and security in core knowledge allows children to explore concepts in greater depth exploring and evaluating concepts and ideas enabling children to articulate informed responses about developing their capability, combining their designing and making skills with knowledge and understanding in order to create quality products.

At St Peter's the journey to becoming design and technologically literate begins in the Early Years. Our youngest children learn about design and technology within the EYFS area of learning known as 'Expressive Arts and Designs' and 'Physical Development.' The objectives are set out in the Early Learning Goals which underpin the curriculum planning of children aged between three and five years old. These will be led by the children's interest and the 'here and how' gained from the observation, assessment and planning cycle. Examples of the themes incorporated include designing, building and painting a dinosaur using junk modelling, in the Dinosaurs topic.

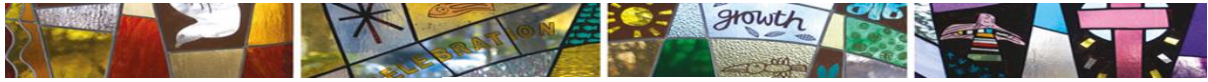
By the time children reach the end of Year Six they will be securely design and technologically literate and working in line with age related national expectations. They will have experienced a number of enrichment opportunities to enhance their design and technological understanding.

Our children will have a rich and deep knowledge of local, national and international design and technology and will be able to use design and technological thinking skills such as investigating, considering, reflecting and reviewing the design and technology world.

Our children will enjoy asking and answering challenging questions about design and technology and making links across different subjects.

When conducting design and technological research, they will select from a range of design and technological sources, using vocabulary confidently and accurately. They will be able to analyse and evaluate the sources of information they use.





## Essential Characteristics of Design and Technology

A feature of our curriculum design is the use of Essential Characteristics. These are the learning characteristics developed through the subject overtime. They act as a common thread between all the units studied in a subject and are developed from Early Years to Year 6.

In Design and Technology, they are:

- Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.
- An excellent attitude to learning and independent working.
- The ability to use time efficiently and work constructively and productively with others.
- The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject and knowledge of, up-to-date technological innovations in materials, products and systems.

## Design and Technology Threshold Concepts

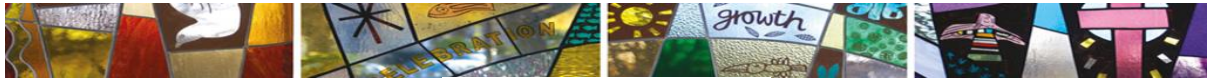
A further feature of our curriculum design are Threshold concepts.

Threshold concepts are the 'big ideas' that shape children's thinking within each subject. The same threshold concepts will be explored in every year group and children will systematically build their understanding of them. An important principle, is that exploring concepts will never be complete; children will continue to explore them for as long as they continue to study the subject.

In Design and Technology, they are:

- **Master practical skills**  
This concept involves developing the skills needed to make high quality products (we have highlighted a range of skills but they may be added to or changed as appropriate for your school).
- **Design, make, evaluate and improve**  
This concept involves developing the process of design thinking and seeing design as a process.
- **Take inspiration from design throughout history**  
This concept involves appreciating the design process that has influenced the products we use in everyday life.





## **Knowledge in Design and Technology**

Knowledge in design and technology typically falls into two categories. Substantive knowledge concerns the key facts and concepts in a subject (e.g. common items such as a bicycle and flagpoles have examples of a gear and pulley mechanism). Disciplinary knowledge relates to the thought process and understanding needed to explore and construct understanding within the subject (e.g. the research, design, making and evaluation process for a specific mechanism).

## **SEND in Design and Technology**

Wherever possible or appropriate children with SEND access design and technology along with their peers as we recognise the importance for all our children to access our curriculum in line with our curriculum design principles.

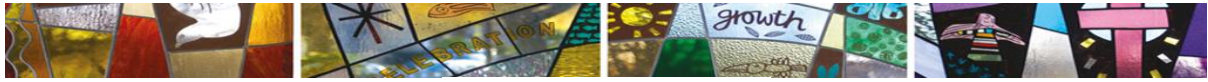
For some children with SEND, particularly those with high needs, access to design and technology is considered along with ensuring they have access to their personalised or adjusted curriculum. For example, enabling access to specialist programmes such as those advised by speech and language therapists, occupational therapy programmes or the SEN Hub. These programmes are timetabled to minimise the impact on the child's access to a broad and rich curriculum and do not impact on access to educational visits relating to design and technology. Typically, these programmes are identified in EHCPs and ILPs and curriculum adaptations are agreed with parents.

Higher attainers in this subject are challenged to ensure they become fluent with the core key concepts through additional questioning and prompts (and tasks where appropriate) which helps extend their verbal reasoning skills as well as supporting them to engage in creating, evaluating, and analysing, delving deeper into the subject content.

For children with SEND, access to the learning in design and technology in lessons may need to be differentiated and scaffolded, whilst the planned, progressive curriculum content is retained. Children are supported to succeed through:

- Breaking down tasks into smaller chunks to achieve and prioritising understanding over task completion.
- Giving sufficient time to process instructions, or adapted verbal or written instructions.
- Wherever appropriate or possible, information is supported by pictorial or concrete cues. E.g. use of everyday objects with electrical systems such as switches, bulbs, buzzers and motors to hold and feel.
- Scaffolded questions from adults and orally rehearsing thoughts with an adult.
- Where appropriate or necessary, pre-teaching core vocabulary or concepts.
- Resources that support reduced cognitive load. E.g. a selection of design templates to choose from





For children with very high needs, they may require additional resources such as social stories to learn challenging concepts. They are supported with additional teaching assistant time that is proportioned to enable children to succeed in design and technology whilst promoting independence.

### **Monitoring & Assessing Progress in Design and Technology**

By progress, we mean children knowing and remembering more. The key question we ask is; *'has a child really gained the knowledge to understand the key knowledge and concepts'*.

Assessing children's progress is vital in order to establish their acquisition of knowledge and skills is building confidence and fluency in all subjects. At St Peter's learning always starts with the children's prior knowledge and any misconceptions they may have. Class teachers decide upon the most appropriate age-related way of obtaining the children's prior knowledge. Misconceptions that arise throughout the unit are identified and addressed appropriately by the teacher.

We track progress through teacher judgement, supplemented by frequent low stakes knowledge recalls (frequently in quiz format) and occasional formal tests to ensure knowledge is recalled and children are genuinely building upon secure prior knowledge.

In most subjects we are developing, knowledge organisers summarise key vocabulary (with agreed definitions), facts, and concepts. These clarify what has to be taught and are used as the basis of quizzes so that teachers can check the knowledge has been embedded.

In addition to assessing if children have secured the agreed key knowledge 'Milestones' related to the threshold concepts are used to assess children's understanding and progress. Systematic planning of opportunities to learn and practice the knowledge and skills of each milestone is built into each subject planning overview.

A blocked approach to curriculum delivery including systematic structured opportunities for recall is currently being developed and implemented.

