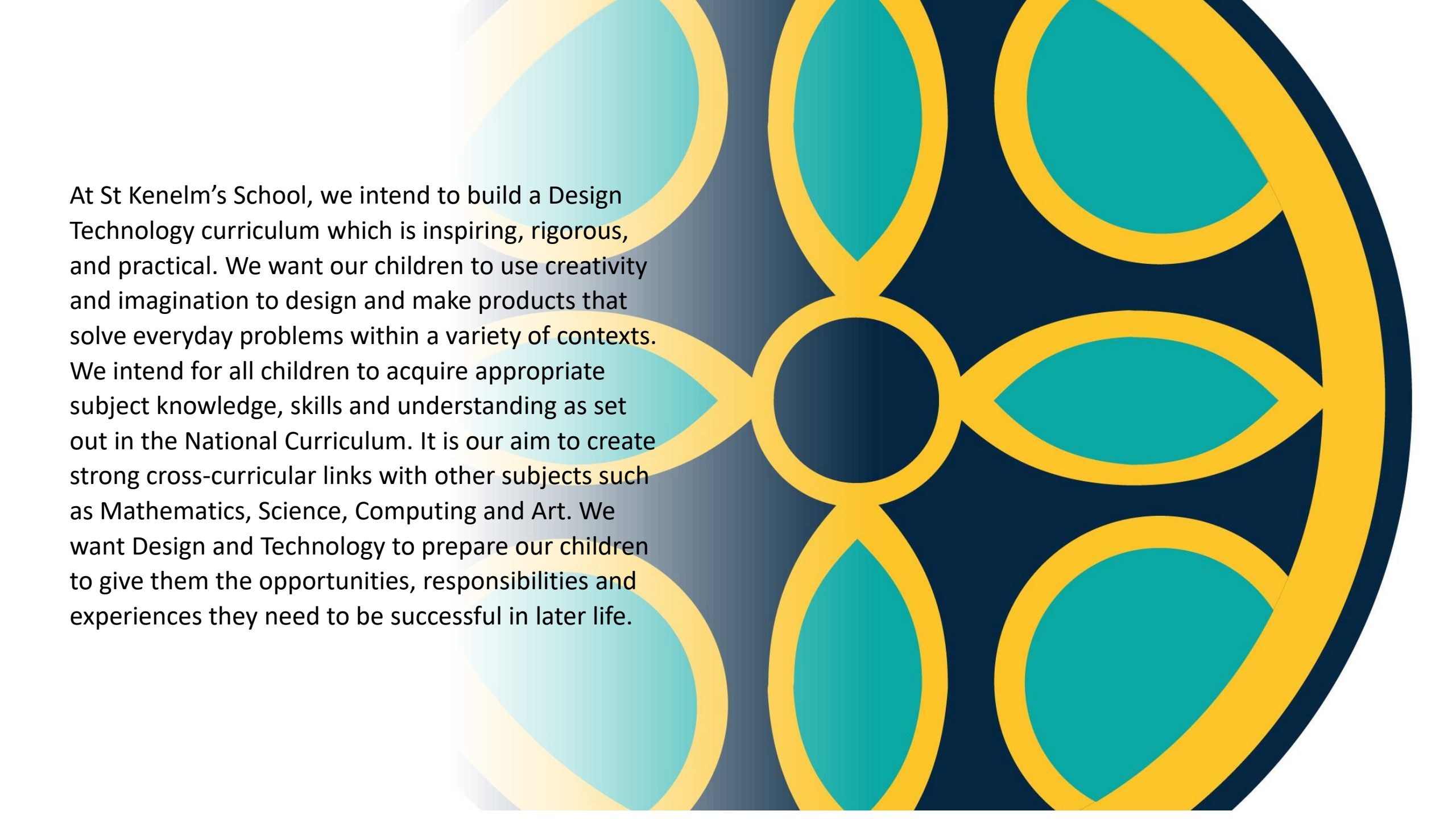




Design and Technology

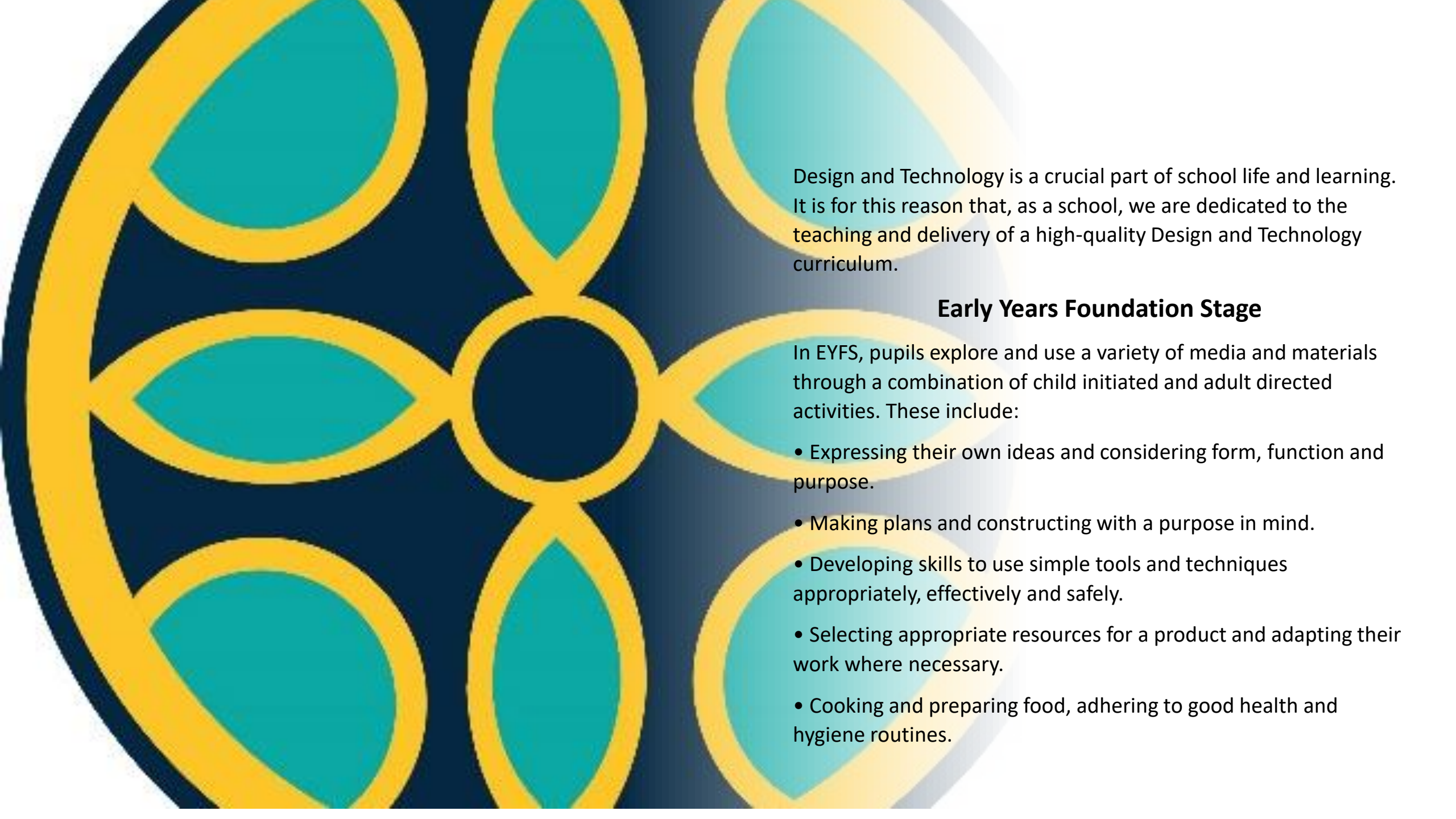
“Enjoy failure and learn from it. You can never learn from success.”

James Dyson



At St Kenelm's School, we intend to build a Design Technology curriculum which is inspiring, rigorous, and practical. We want our children to use creativity and imagination to design and make products that solve everyday problems within a variety of contexts. We intend for all children to acquire appropriate subject knowledge, skills and understanding as set out in the National Curriculum. It is our aim to create strong cross-curricular links with other subjects such as Mathematics, Science, Computing and Art. We want Design and Technology to prepare our children to give them the opportunities, responsibilities and experiences they need to be successful in later life.





Design and Technology is a crucial part of school life and learning. It is for this reason that, as a school, we are dedicated to the teaching and delivery of a high-quality Design and Technology curriculum.

Early Years Foundation Stage

In EYFS, pupils explore and use a variety of media and materials through a combination of child initiated and adult directed activities. These include:

- Expressing their own ideas and considering form, function and purpose.
- Making plans and constructing with a purpose in mind.
- Developing skills to use simple tools and techniques appropriately, effectively and safely.
- Selecting appropriate resources for a product and adapting their work where necessary.
- Cooking and preparing food, adhering to good health and hygiene routines.



Years 1-6

Our Design and Technology curriculum enables pupils to develop the skills that allow them to think creatively and imaginatively to design, make and evaluate products within a variety of contexts. At St Kenelm's we do this through:

- A well thought out whole school yearly overview of the DT curriculum, which allows for progression across year groups in all areas of DT (textiles, mechanisms, structures, food and electrical systems).
- Well planned and resourced projects linking to termly topics. This provides children with a hands-on and enriching experience.
- A range of skills being taught ensuring that children are aware of health and safety issues related to the tasks undertaken.
- Teachers being given ownership and flexibility to plan for Design and Technology ensuring time is given for children to be critical, inventive and reflective on their work.
- Each project from Year 1 to Year 6 addressing the principles of designing, making and evaluating, incorporating relevant technical knowledge and understanding in relevant contexts.
- When appropriate, teachers will plan opportunities to increase the cultural capital from which the children can draw in the future, bringing in a wide range of expertise, e.g. designers, chefs, nutritionists.

At St Kenelm's, we promote Design and Technology through a range of practical experiences including gardening and outdoor learning. Children will learn about where our food comes from by growing their own and the importance of a balanced, healthy and varied diet. We aim for classes to each have an allotment plot at school and each year group in charge of their own patch to grow and harvest food.

Through the teaching of Design and Technology, children will have clear enjoyment and confidence which they will then apply to other areas of the curriculum. Through carefully planned activities, the pupils develop the creative, technical and practical expertise needed to perform everyday tasks. They gain a firm foundation of knowledge and skills to see them equipped to become life-long learners. Assessment informs the Design and Technology lead of any further areas for curriculum development, pupil support and/or training requirements for staff.



Design and Technology

Overview



2023-2024	Autumn	Spring	Summer
YEAR 1	Mechanisms Design a simple toy using levers and sliders	Structures Design a house	Food Design and prepare a salad from our own harvest
YEAR 2	Food Make a Christmas cake	Structures Design a pop-up card	Textiles Design and make a hand or finger puppet
YEAR 3	Mechanical Systems Create a pop-up Story-book	Textiles Make do and mend	Structures Design and make a tree house
YEAR 4/5	Food A healthy diet and food types	Structures Design and make mini green houses	Electrical systems Torches
YEAR 5/6	Structures Freestanding structures	Mechanical systems Moving vehicles	Textiles Design and make bunting

D&T Skills Progression



Areas of learning	3-4 Year olds	Reception
Communication and Language	<p>Learn new vocabulary.</p> <p>Use a wider range of vocabulary.</p> <p>Understand a question or instruction that has two parts, such as: “Get your coat and wait at the door”. Understand ‘why’ questions, like: “Why do you think the caterpillar got so fat?”</p>	<p>Understand how to listen carefully and why listening is important.</p> <p>Ask questions to find out more and to check they understand what has been said to them.</p> <p>Articulate their ideas and thoughts in well-formed sentences.</p> <p>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</p>
Personal, social and emotional development	Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen, or one which is suggested to them.	Show resilience and perseverance in the face of challenge.
Physical Development	<p>Choose the right resources to carry out their own plan. For example, choosing a spade to enlarge a small hole they dug with a trowel. Collaborate with others to manage large items, such as moving a long plank safely, carrying large hollow blocks.</p> <p>Use one-handed tools and equipment, for example, making snips in paper with scissors. Use a comfortable grip with good control when holding pens and pencils. Show a preference for a dominant hand.</p>	<p>Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</p> <p>Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.</p>
Literacy		
Mathematics	<p>Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: ‘sides’, ‘corners’, ‘straight’, ‘flat’, ‘round’.</p> <p>Make comparisons between objects relating to size, length, weight and capacity.</p> <p>Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc. Combine shapes to make new ones – an arch, a bigger triangle, etc.</p>	Select, rotate and manipulate shapes to develop spatial reasoning skills.
Understanding the World	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Talk about the differences between materials and changes they notice.	
Expressive Arts and Design	Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.	<p>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</p> <p>Create collaboratively, sharing ideas, resources and skills.</p>

Year 1

Design Developing, planning and communicating ideas	<ul style="list-style-type: none">▪ Begin to draw on their own experience to help generate ideas and research conducted on criteria.▪ Begin to understand the development of existing products; What they are for, how they work, materials used. Start to suggest ideas and explain what they are going to do.▪ Understand how to identify a target group for what they intend to design and make based on design criteria.▪ Begin to develop their ideas through talk and drawings.▪ Make templates and mock ups of their ideas in card and paper or using ICT.
Make Working with tools, equipment, materials and components to make quality products	<ul style="list-style-type: none">▪ Begin to make their design using appropriate techniques.▪ With help, measure, cut and shape a range of materials.▪ Explore using tools e.g. scissors, a hole punch safely.▪ Begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glue, masking tape.▪ Begin to use simple finishing techniques to improve the appearance of their product.
Technical knowledge	<ul style="list-style-type: none">▪ Begin to 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.
Evaluate Evaluate processes and products	<ul style="list-style-type: none">▪ Start to evaluate their product by discussing how well it works in relation to the purpose (design criteria).▪ When looking at existing products explain what they like and dislike about products and why.▪ Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make.
Cooking and Nutrition	<ul style="list-style-type: none">▪ Begin to understand that all food comes from plants or animals.▪ Explore the understanding that food has to be farmed, grown elsewhere (e.g. home) or caught.▪ Start to understand how to name and sort foods into the five groups in 'The Eat Well Plate'.▪ Begin to understand that everyone should eat at least five portions of fruit and vegetables every day.▪ Know how to prepare simple dishes safely and hygienically without using a heat source.▪ Know how to use techniques such as cutting, peeling and grating.

Year 2

Design

Developing, planning and communicating ideas

- Start to generate ideas by drawing on their own and other people's experiences.
- Begin to develop their design ideas through discussion, observation, drawing and modelling.
- Identify a purpose for what they intend to design and make.
- Understand how to identify a target group for what they intend to design and make based on design criteria.
- Develop their ideas through talk and drawings and label parts.
- Make templates and mock ups of their ideas in card and paper or using ICT.

Make

Working with tools, equipment, materials and components to make quality products

- Begin to select tools and materials; use correct vocabulary to describe them.
- With help, measure, cut and score with some accuracy.
- Learn to use hand tools safely and appropriately.
- Start to assemble, join and combine materials in order to make a product.
- Demonstrate how to cut, shape and join fabric to make a simple product.
- Use basic sewing techniques.
- Start to choose and use appropriate finishing techniques based on own ideas.

Technical knowledge

- 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.

Evaluate

Evaluate processes and products

- Evaluate their work against their design criteria.
- Look at a range of existing products explain what they like and dislike about the products and why.
- Start to evaluate their products as they are developed, identifying strengths and possible changes they might make.
- With confidence, talk about their ideas, saying what they like, and dislike about them.

Cooking and Nutrition

- Understand that all food comes from plants or animals.
- Know that food has to be farmed, grown elsewhere (e.g. home) or caught.
- Understand how to name and sort foods into the five groups in 'The Eat well plate'.
- Know that everyone should eat at least five portions of fruit and vegetables every day.
- Demonstrate how to prepare simple dishes safely and hygienically, without using a heat source.
- Demonstrate how to use techniques such as cutting, peeling and grating.

Year 3

Design

Developing, planning and communicating ideas

- With growing confidence, generate ideas for an item, considering its purpose and the user/s.
- Start to order the main stages of making a product.
- Identify a purpose and establish criteria for a successful product.
- Understand how well products have been designed, made, what materials have been used and the construction technique.
- Learn about inventors, designers, engineers, chefs and manufactures who have developed ground-breaking products.
- Start to understand whether products can be recycled or reused.
- Know to make drawings with labels when designing.
- When planning explain their choice of materials and components including function and aesthetics.

Make

Working with tools, equipment, materials and components to make quality products

- Select a wider range of tools and techniques for making their product i.e. construction materials and kits, textiles, food ingredients, mechanical components and electrical components.
- Explain their choice of tools and equipment in relation to the skills and techniques they will be using.
- Measure, mark out, cut, score and assemble components with more accuracy.
- Start to work safely and accurately with a range of simple tools.
- Start to think about their ideas as they make progress and be willing to change things if this helps them to improve their work.
- Start to measure, tape or pin, cut and join fabric with some accuracy.

Technical knowledge

- Start to understand that mechanical and electrical systems have an input, process, and output.
- Start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement.
- Know how simple electrical circuits and components can be used to create functional products.

Evaluate

Evaluate processes and products

- Start to evaluate their product against original design criteria e.g. how well it meets its purpose.
- Begin to disassemble and evaluate familiar products and consider the views of others to improve them.
- Evaluate the key designs of individuals in design and technology who have helped shape the world.

Cooking and Nutrition

- Start to know that food is grown (such as tomatoes, wheat, and potatoes), reared (such as pigs, chickens, and cattle) and caught (such as fish) in the UK, Europe, and the wider world.
- Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.
- Begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading, and baking.
- Start to understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate'.
- Begin to know that to be active and healthy, food and drink are needed to provide energy for the body.

Year 4

Design

Developing, planning and communicating ideas

- Start to generate ideas, considering the purposes for which they are designing- link with Mathematics and Science.
- Confidently make labelled drawings from different views showing specific features.
- Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempt fails.
- Identify the strengths and areas of development in their ideas and products.
- When planning, consider the views of others, including intended users, to improve their work.
- Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.
- When planning explain their choice of materials and components according to function and aesthetic.

Make

Working with tools, equipment, materials and components to make quality products

- Select a wider range of tools and techniques for making their products safely.
- Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques.
- Start to join and combine materials and components accurately in temporary and permanent ways.
- Understand how to reinforce and strengthen a 3D framework.
- Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy.
- Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.

Technical knowledge

- Know how mechanical systems such as cams or pulleys or gears create movement.
- Understand how more complex electrical circuits and components can be used to create functional products.
- Continue to learn how to program a computer to monitor changes in the environment and control their products.

Evaluate

Evaluate processes and products

- Evaluate their products carrying out appropriate tests.
- Start to evaluate their work both during and at the end of the assignment.
- Be able to disassemble and evaluate familiar products and consider the views of others to improve them.
- Evaluate the key designs of individuals in design and technology and find out how this has helped shape the world.

Cooking and Nutrition

- Understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.
- Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.
- Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.
- Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eatwell plate'
- Know that to be active and healthy, food and drink are needed to provide energy for the body.

Year 5

Design

Developing, planning and communicating ideas

- Start to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces.
- Begin to use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.
- With growing confidence, apply a range of finishing techniques, including those from art and design.
- Draw up a specification for their design- link with Mathematics and Science.
- Use results of investigations, information sources, including ICT when developing design ideas.
- With growing confidence select appropriate materials, tools and techniques.
- Start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.

Make

Working with tools, equipment, materials and components to make quality products

- Select appropriate materials, tools and techniques e.g. 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.
- Begin to measure and mark out more accurately.
- Demonstrate how to use skills in using different tools and equipment safely and accurately with growing confidence cut and join with accuracy to ensure a good-quality finish to the product.
- Weigh and measure accurately (time, dry ingredients, liquids).
- Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment using ICT.

Technical knowledge

- Understand how mechanical systems such as cams or pulleys or gears create movement.
- Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products.
- Understand that mechanical and electrical systems have an input, process and output.

Evaluate

Evaluate processes and products

- Start to evaluate a product against the original design specification and by carrying out tests.
- Evaluate their work both during and at the end of the assignment.
- Begin to evaluate it personally and seek evaluation from others.
- Evaluate the key designs of individuals in design and technology who have helped shape the world.

Cooking and Nutrition

- Begin to understand how the seasons may affect the food available.
- Prepare and cook a variety of dishes safely and hygienically.
- Start to understand how to use a range of techniques for food preparation.
- Begin to understand that food and drink contain different food groups – nutrients, water and fibre – that are needed for good health.

Year 6

Design

Developing, planning and communicating ideas

- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and pattern pieces.
- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose.
- Accurately apply a range of finishing techniques, including those from art and design.
- Draw up a specification for their design- link with Mathematics and Science.
- Plan the order of their work, choosing appropriate materials, tools and techniques.
- Suggest alternative methods of making if the first attempts fail.
- Identify the strengths and areas for development in their ideas and products.
- Know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.

Make

Working with tools, equipment, materials and components to make quality products

- Confidently select appropriate tools, materials, components and techniques and use them.
- Use tools safely and accurately.
- Assemble components to make working models.
- Aim to make and to achieve a quality product.
- With confidence, pin, sew and stitch materials together to create a product.
- Demonstrate when making modifications as they go along.
- Construct products using permanent joining techniques.
- Know how to reinforce and strengthen a 3D framework.
- Understand that mechanical and electrical systems have an input, process and output.
- Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment using ICT.

Technical knowledge

- Understand how mechanical systems such as cams or pulleys or gears create movement.
- Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products.

Evaluate

Evaluate processes and products

- Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests.
- Evaluate their work both during and at the end of the assignment.
- Record their evaluations using drawings with labels.
- Evaluate against their original criteria and suggest ways that their product could be improved.
- Evaluate the key designs of individuals in design and technology who have helped shape the world.

Cooking and Nutrition

- Understand how the seasons may affect the food available.
- Understand how to use a range of techniques for food preparation.
- Understand that food and drink contain different food groups – nutrients, water and fibre – that are needed for good health.
- Know that food is sourced from around the world and is grown, reared and caught.
- Know how to prepare and cook a variety of predominantly savory dishes safely and hygienically including, where appropriate, the use of a heat source.