

Design and Technology Policy and Guidelines



INTENT (Why)

The importance of primary design and technology

Design and Technology gives children the opportunity to develop skills, knowledge and understanding of designing and making functional products. It is vital to nurture creativity and innovation through design, and by exploring the designed and made world in which we all live and work. The skills developed through Design and Technology can help with overall learning across the rest of the curriculum. It enables students to utilise academic knowledge and understanding in an applied context. Gaining knowledge of properties of materials and manufacturing methods enables students to make sense of the world we live in. Understanding how materials behave in their natural state, and under certain conditions, helps educate students about why products and the built-up environment are made of specific materials. Through Design and Technology, children use problem solving skills and creativity to consider important issues. They learn about designing solutions to improve people's lives and understand more about the impact of products on the world. (Source: <https://www.data.org.uk/for-education/primary/>)

Our ambition

We aim for children to develop:

- 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.

We aim to do this by providing:

1. A coherent, structured, academic curriculum
2. Mastery and retention for all
3. Excellent teaching that demonstrates good subject knowledge supported by good quality guidance materials and strong subject leaders
4. Rich and broad learning experiences that develop curiosity, deepen knowledge, promote 'cultural capital' and develop life-long interest;
5. Explicit teaching of metacognition/thinking skills and good learning habits
6. Appropriate experiences for children to develop as confident, responsible citizens

IMPLEMENTATION (How)

1. A coherent, structured and academic curriculum

Based on the guidance set out in Chris Quigley's 'Essentials' curriculum', we deliver the Design and Technology Curriculum through a mastery approach using breadth, depth and progression guidance provided (see curriculum policy).

We have created a curriculum map for Design and Technology linking it with other curriculum areas as much as possible through class themes/topics. We also teach Design and Technology discretely when it does not naturally fit with the overall topic theme. The curriculum map demonstrates effective coverage and learning is thoughtfully spaced with opportunities to revisit concepts at regular intervals (interleaving retrieval and spacing). Although most concepts are revisited on a yearly basis, there is a two year cycle for covering topics in greater detail.

Quigley gives us the tools for a clear roadmap for progression through 3 milestones rather than year group outcomes (see curriculum policy).

This complements our mixed age classes and we have adapted the milestones to our year group configuration. This is mapped on a one and two-year cycle as shown in the Progression for Learning map given below.

Design and Technology Curriculum Map with Progression for Learning

Generic skills taught alongside all Design and Technology units
For KS1 and KS2 these incorporate:

- **Designing, making, evaluating and improving** (developing the process of design thinking and seeing design as a process)
- **Taking inspiration from design throughout history** (appreciating the design process that has influenced the products we use in everyday life).

EYFS (From Development Matters 2021)	Developing ideas and skills • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.	
Class 1 	Designing, making, evaluating and improving • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design.	Taking inspiration from design throughout history • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created.
Class 2 	Designing, making, evaluating and improving • Design with purpose by identifying opportunities to design. • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design. • Use software to design and represent product designs.	Taking inspiration from design throughout history • Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. • Improve upon existing designs, giving reasons for choices. • Disassemble products to understand how they work.
Class 3 	Designing, making, evaluating and improving • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high-quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer-aided designs to represent designs.	Taking inspiration from design throughout history • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.

DT Units of Work: Progression and Coverage

Class 1 	Year A	Autumn 1	‘ME AND MY WORLD’ Quigley Art unit of study EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) • Malleables - to consolidate gross motor, maths skills etc. • Construction - junk modelling. • Construction toys • Textiles - weaving, cutting.
		Autumn 2	‘IN THE DARK’ YR R: • Provide opportunities to work together to develop and realise creative ideas. • Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. • Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. • Provide a range of materials and tools and teach children to use them with care and precision. EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) • Malleables - to consolidate gross motor, maths skills etc. • Construction - junk modelling. • Construction toys • Textiles - weaving, cutting. YR 1: Materials Milestone 1 • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).
		Spring	‘LET’S BUILD’

		YR R: • Provide opportunities to work together to develop and realise creative ideas. • Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. • Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. • Provide a range of materials and tools and teach children to use them with care and precision. EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) • Malleables - to consolidate gross motor, maths skills etc. • Construction - junk modelling. • Construction toys • Textiles - weaving, cutting. YR 1:Mechanics Milestone 1 • Create products using levers, wheels and winding mechanisms. (Kapow Unit - Mechanisms - wheels and axles, starter lessons for wheels, levers and winding mechanisms to give ideas for the egg mobile) • <i>Whole school home learning project - The Great Egg Mobile</i>
	Summer	‘ON THE FARM’ YR R: • Provide opportunities to work together to develop and realise creative ideas. • Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. • Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. • Provide a range of materials and tools and teach children to use them with care and precision. EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) • Malleables - to consolidate gross motor, maths skills etc. • Construction - junk modelling. • Construction toys • Textiles - weaving, cutting. YR 1: Food Milestone 1 • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales.

			Assemble or cook ingredients.
Class 1 	Year B	Autumn 1	‘ALL ABOUT ME’ Quigley Art unit of study EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) - Malleables - to consolidate gross motor, maths skills etc. - Construction - junk modelling. - Construction toys - Textiles - weaving, cutting.
		Autumn 2	‘HEROES AND VILLAINS’ YR R: - Provide opportunities to work together to develop and realise creative ideas. - Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. - Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. - Provide a range of materials and tools and teach children to use them with care and precision. EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) - Malleables - to consolidate gross motor, maths skills etc. - Construction - junk modelling. - Construction toys - Textiles - weaving, cutting. YR 1: Construction Milestone 1 - Use materials to practise drilling, screwing, glueing and nailing materials to make and strengthen products.
		Spring	‘LOCAL HISTORY PROJECT’ YR R: - Provide opportunities to work together to develop and realise creative ideas. - Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. - Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. - Provide a range of materials and tools and teach children to use them with care and precision.

			YR 1: Textiles Milestone 1 • Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). <i>Whole school home learning project - The Great Egg Mobile</i> EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) • Malleables - to consolidate gross motor, maths skills etc. • Construction - junk modelling. • Construction toys • Textiles - weaving, cutting.
		Summer	‘CARNIVAL OF THE ANIMALS’ YR R: • Provide opportunities to work together to develop and realise creative ideas. • Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. • Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. • Provide a range of materials and tools and teach children to use them with care and precision. EAD Continuous Provision (skills to be taught discretely and opportunities provided for children to practise ideas and skills) • Malleables - to consolidate gross motor, maths skills etc. • Construction - junk modelling. • Construction toys • Textiles - weaving, cutting. YR 1: Food Milestone 1 • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients.
Class 2	Year A	Autumn 1	‘THE ROMANS’ Quigley Art unit of study

			
		Autumn 2	‘FORCES AND MAGNETS’ Materials: Milestone 2 • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques.
		Spring	‘TRADE’ Textiles: Milestone 2 • Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles. <i>Whole school home project - The Great Egg Mobile</i>
		Summer	‘HISTORY’ Construction Revise Milestone 1 (see Class 1) Teach Milestone 2 • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques.
Class 2 	Year B	Autumn 1	‘CONTRASTING LOCATIONS’ Quigley Art unit of study
		Autumn 2	‘LIGHT AND ELECTRICITY’ Quigley Electricity and Electronics unit of study Milestone 2

			Create series and parallel circuits
		Spring	‘LOCAL HISTORY TOPIC’ Quigley Mechanics unit of study Milestone 2 Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). <i>Whole school home project - The Great Egg Mobile</i>
		Summer	‘THE GARDENER’ Quigley Food unit of study Milestone 2 - Prepare ingredients hygienically using appropriate utensils. - Measure ingredients to the nearest gram accurately. - Follow a recipe. - Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).
Class 3 	Year A	Autumn 1	‘ANCIENT CIVILISATIONS’ Quigley Art unit of study
		Autumn 2	‘SPACE’ Quigley Construction unit of study Milestone 3 Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).
		Spring	‘WHAT IS A SCIENTIST?’ Quigley Mechanics unit of study Milestone 3 - Convert rotary motion to linear using cams. - Use innovative combinations of electronics (or computing) and mechanics in product designs.

Class 3 			<i>Whole school home project - The Great Egg Mobile</i>
		Summer	‘WHERE ON EARTH?’ Quigley Food unit of study Milestone 3 • Understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • Create and refine recipes, including ingredients, methods, cooking times and temperatures.
		Autumn 1	‘INVADERS AND SETTLERS’ Quigley Art unit of study
		Autumn 2	‘INVENTIONS’ 1. Quigley Electricals and Electronics and unit of study Milestone 3 • Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). 2. Quigley Computing unit of study Milestone 3 • Write code to control and monitor models or products.
		Spring	‘BRITISH HISTORY LINKED TO LOCAL STUDY’ 1. Quigley Materials unit of study • Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). • Show an understanding of the qualities of materials by choosing appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). 2. Quigley Mechanics unit of study Milestone 3 • Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.

			<i>Whole school home project - The Great Egg Mobile</i>
		Summer	‘THE NATURAL WORLD’ Quigley Art (Textiles) unit of study Quigley Textile unit of study • Create objects (such as a cushion) that employ a seam allowance. • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). • Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion)

2. Mastery and retention for all (see Teaching and Learning policy)

- Progression within lessons
- Support and Challenge
- Effective use of additional adults
- Low threshold high ceiling activities
- Clear learning objectives and success criteria
- Explicit vocabulary teaching
- Knowledge maps (to come in forward planning)

3. Excellent Teaching supported by strong subject leadership

- Effective teaching and learning policy
- Non negotiables (Teaching the MB way)
- Excellent CPD
- Collaborative planning
- Easy to access resources (see resources list)
- Guidance - (see guidance list)

4. Rich and Broad Learning Experiences to support Cultural Capital

We provide practical, purposeful and authentic experiences for children to develop vocabulary, explore concepts and develop the skills to work scientifically. More specifically we provide:

- Opportunities to experiment and play (e.g. play-based curriculum into Year 1 - continuous provision for all children to practise construction and textile skills)
- Extensive practical resources (see resources list)
- Frequent access to the local environment (both on and off site)

- Opportunities to work off site to broaden their skills and experiences (e.g. Didcot Railway Station, Science Oxford)
- Links with science, history and maths to learn about the work of important figures in the world of Design and Technology and their important place in the advancement of science (e.g. history of science unit on the invention of plastic and Leo Baekeland)
- Opportunities to exhibit and explain their learning (Marsh Baldon Great Egg Race)
- Extra-curricular activities to sustain their interest and curiosity (e.g. Cowley Road Carnival)

5. Thinking skills and Learning Habits

Through design and technology:

Skills

1. Children develop creative problem-solving abilities
2. Children develop motor skills through working with tools
3. Children cultivate personal qualities - e.g. persistence, determination, respect for others and their views, a personal value system.
4. Children learn to self-evaluate, and learn critical thinking and resilience

Values

4. Children develop a respect for the values of craftsmanship.
5. Children develop a responsibility for the consequences of decisions.

Knowledge

6. Children acquire conceptual knowledge
7. Children value knowledge as a tool rather than solely the product
9. Establish designing as a life skill.
10. Gain insights into the technological world and develop a set of skills to use in maturing views on the advantages and disadvantages of technological developments.

6. Responsible Citizenship

In Design and Technology children are given the opportunity to see their role as global citizens and agents of change. Through historical figures they learn how the decisions and work of others positively, or adversely affected the development of society. Children study contemporary political, economic, and social issues such as the growth of human settlements and consequent effect on biodiversity, the need to reduce plastic and the evaluation of alternative materials, and the need for invention in a changing world.

IMPACT - Effect

Assessment

The impact of our curriculum is that by the end of each milestone, the vast majority of pupils have sustained mastery of the content, that is, they remember it and are fluent with it; Many pupils have a greater depth of understanding. Pupils' have developed a connected understanding of our curriculum content. We track carefully to ensure pupils are on track to reach the expectations of our curriculum.

We assess and record children's learning outcomes through a variety of assessment methods including:

POP Tasks (proof of progress)

Children's work

Observation of lessons

Child interviews

Displays

Photographs

Anecdotal evidence

Insight

Supplementary Guidance found on shared drive

1. Resources List
2. List of in school planning resources
3. List of useful websites
4. List of useful subscriptions

