

The Wider Curriculum at Gayton Primary Academy

DT: Progression of skills and knowledge

Intent: Our Curriculum has been designed to ensure each and every child can 'live life in all its fullness' by offering stimulating and awe-inspiring learning experiences with Christian values at its heart.

EYFS DT		
Three and Four-Year-Olds	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.
	Physical Development	• Use large-muscle movements to wave flags and streamers, paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors.
	Understanding the World	• Explore how things work.
	Expressive Arts and Design	• Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, in order 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. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects.
Reception	Physical Development	• Progress towards a more fluent style of moving, with developing control and grace. • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.

	Expressive Arts and Design	• 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.
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KS1 objectives

Objective	Year 1/2						
	Cycle 1				Cycle 2		
	Eat more fruit & Veg	Moving Minibeasts	Stable Structures		Puppets	Vehicles	Perfect pizzas
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							

KS2 objectives

Year 3/4						
Objective	Cycle 1			Cycle 2		
	Storybooks	British Inventors	Light-Up Signs	Seasonal Stockings	Making Mini Greenhouses	Seasonal food
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						

Year 5/6						
Objective	Cycle 1			Cycle 2		
	Building Bridges	Chinese Inventions	Fashion and Textiles	Programming Planners	Bird House Builders	Burgers
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						

Scheme of work	Cooking and Nutrition
Eat More Fruits and Vegetable Yr 1/2	• I can name a variety of fruits and vegetables. • I can use adjectives to describe the taste, smell and texture of a variety of fruits and vegetables. • I know that some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten. • I understand basic food hygiene, e.g. washing hands, tying long hair back and keeping surfaces clean. • I can use a knife to cut some fruits and vegetables in different ways. • I can grate an apple and a carrot. • I can peel a banana, apple and cucumber.
Perfect Pizzas Yr1/2	• I can name a variety of pizza toppings. • I can use the model of the balanced plate to evaluate how healthy different pizzas are. • I can explore different types of bread and evaluate which would work best for a pizza base. • I can identify which food group a variety of pizza toppings belong to. • I can sort pizza toppings into groups based on different criteria, e.g. animal vs plant products. • I can explain why each of the food groups is important for a balanced diet. • I can design and make a healthy pizza following given criteria. • I can evaluate my finished pizza, saying what I think and feel about it.
Seasonal food Yr 3/4	• I can explain what the term 'seasonal food' means. • I know that different parts of the world have different seasonal food. • I can discuss the benefits and problems of unseasonal food being available in shops all year round. • I know that some foods, like wheat, are available all year round in the UK. • I can practise cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating. • I can follow a recipe to make fairy cakes. • I can describe the cycle of wheat production in the UK. • I can distinguish between fruits that are grown in the UK and those that are grown abroad. • I know how food producers can speed up or slow down the ripening process to make fruits and vegetables available all year round. • I can follow a recipe to make fruit tarts using seasonal fruit. • I can follow a recipe to make stuffed peppers. • I know some of the nutrients we get from fruits, vegetables, meat, fish and dairy products. • I know when certain meats are in season in the UK and which are available all year round. • I can follow a recipe to make meatballs. • I know some vegetarian options that provide the same nutrients as meat. • I can explain how fish are caught or reared, processed and used in healthy meals. • I can use what I have learnt about seasonal food to design healthy meals and menus.

Burgers	• I know that most foods we buy have nutrition labels to help us make informed choices about what we eat. • I know that calories come from fats, proteins and carbohydrates. • I can evaluate how healthy a burger is based on its nutrition label. • I can compare different burgers and assess which is healthiest. • I can explain some of the different ways in which burger patties are cooked. • I can follow a recipe to make a beef, turkey or vegetable burger patty. • I can add ingredients to a basic burger patty to reflect global cuisine. • I can follow a recipe to make different burger sauces, including salsa, tzatziki and barbecue sauce. • I can design a burger menu to incorporate different patties, sides and sauces. • I can explore, taste and assess different types of bread and their suitability for a burger bun. • I can offer suggestions for some alternatives for bread. • I can add mixtures of herbs and spices to a basic bread dough to make flavoured burger buns. • I can design a burger for a particular purpose. • I can design a burger for someone with particular dietary requirements. • I can make and evaluate a burger, following my recipe and design.
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Scheme of work	Stable Structures
Stable Structures Yr 1/2	• I can identify the features of toy garages. • I know what the word 'stable' means. • I can make changes to the design of a stable structure to make it fit for purpose. • I can explore a range of materials and evaluate the usefulness of their properties for a particular project. • I can explore how to make stable structures that hold a given object. • I can follow a design to make a stable structure. • I know some ways to make a structure more stable. • I can evaluate my finished structure against a set of given criteria.

British Inventors Yr 3/4	• I can explain how concrete is used to make structures more stable. • I can create a structure strong enough to hold a dictionary using just newspaper and tape.
Making Mini Greenhouses Yr 3/4	• I know what a greenhouse is and how they work. • I can explore a range of different greenhouses. • I know how greenhouses are used today. • I can explain how the shape of a structure affects its stability. • I know that the weight of the structure needs to be evenly spread on the base to make it secure. • I know that the wider a structure's base is, the more stable it will be. • I can use 3D nets to explore potential structures for a greenhouse, assessing their stability. • I can investigate ways of making a structure more stable, e.g. by inserting dowelling or adding triangles at the joins. • I can experiment with a range of materials to test which would be most appropriate for making the structure of a mini greenhouse. • I can design a mini greenhouse using specific design criteria. • I can select appropriate tools and materials to make a mini greenhouse. • I can follow my design to make a mini greenhouse. • I can evaluate my finished mini greenhouse for stability, effectiveness and visual appeal.
Building Bridges Yr 5/6	• I know what beams and pillars are and how they are used in bridge construction. • I can predict which beams will be strongest from their cross-section. • I can test the strength of different beam shapes using paper and card. • I can explain what a truss is and how trusses make bridges stronger. • I can identify the three types of trusses commonly used in bridge design. • I can build a truss bridge spanning a width of 40cm using paper straws. • I can use a fair test to evaluate the strength of my truss bridge. • I can explain how arches work to make bridges stronger. • I can test the arch heights to see which can bear the most load. • I can make an arch frame. • I can explain how suspension bridges use tension forces to work. • I can design, make and evaluate a prototype suspension bridge using a scale of 1:100 according to specific design criteria.

Bird House Buildings	
Yr 5/6	• I can investigate the appearance and function of a variety of different bird houses. • I can identify what materials have been used to construct a variety of bird houses and suggest how the parts have been joined together. • I know what a flat pack diagram is and can use it to identify each part of a structure. • I can create a flat pack diagram of a constructed bird house. • I can draw an exploded diagram. • I can identify the tools associated with basic woodwork. • I can measure, clamp, saw, sand and join wood. • I can use a hand drill to drill a hole in a piece of wood. • I know the safety rules I need to follow when doing woodwork. • I can design a bird house for a particular bird, taking into account the bird's needs. • I can select appropriate tools and materials to use when making a bird house. • I can create a sturdy bird house frame using wood. • I can evaluate my finished bird house, taking into account the views of others to improve my work. • I can use observation to evaluate the effectiveness of my bird house.

Scheme of work	Programming and Electrical
Light-Up Signs Yr 3/4	• I can explore and analyse illuminated signs. • I can create a simple circuit with incandescent bulbs and a switch. • I can describe the difference between an LED and an incandescent light bulb. • I can create a simple circuit with an LED bulb and a resistor. • I can make a circuit with a string of LED lights. • I can design an illuminated light box against a set of design criteria. • I can select materials, tools and components to create a free-standing structure. • I can make a stable, free-standing structure to house an electrical circuit. • I can strip, twist and join wire to make permanent connections. • I can insert an electrical circuit into a free-standing structure to create an illuminated light box. • I can evaluate the effectiveness of my finished product against the design criteria.

Programming Pioneers Yr 5/6	• I can explain how computers and computer programs are used in a variety of products. • I can explain how modern memory chips work to store information. • I can write an algorithm to suggest how various appliances might work. • I know what a computer engineer is and what they do. • I can describe some examples of how computer hardware and software specialists work together to create new products. • I can develop and build a prototype pedestrian crossing using computer programming. • I can develop, model and communicate ideas for an embedded system which monitors and controls a door, room or both. • I can describe the typical design process for computer-controlled electronic products. • I can debug errors in an algorithm. • I can suggest ways to change an algorithm to improve a system. • I can select and use electronic components to construct a prototype of an embedded computer-controlled room system. • I can evaluate my design for a computer-controlled system and consider the views of others to improve my work.
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Scheme of work	Mechanical Systems
Moving Minibeasts Yr 1/2	• I can make a sliding mechanism out of card. • I know what a pivot and lever are. • I can use a pivot and lever mechanism using card and a split pin. • I can make a wheel mechanism using card and a split pin. • I can match a mechanism to the type of movement they produce. • I can design a moving minibeast picture to include a variety of moving mechanisms. • I can follow a design to create a moving minibeast picture for a particular purpose. • I can evaluate my finished moving minibeast picture by identifying things that worked well and things that could be improved.
Vehicles Yr 1/2	• I can investigate a range of vehicles, identifying and labelling their features. • I know what an axle is. • I know what a chassis is. • I can explore different ways of using axles, chassis and wheels to create a moving base. • I can design a vehicle with wheels, axles and chassis, as well as a body. • I can follow a design to make a moving vehicle. • I can evaluate my finished moving vehicle.

Storybooks Yr 3/4	• I can explore moving parts in storybooks, suggesting how they work and what purpose they serve. • I can explain what the words ‘linkage’, ‘pivot’, ‘rotate’ and ‘lever’ mean. • I can use a paper concertina to make an object pop out of a book. • I can arrange and stick paper between pages to create a pop-out. • I can use levers to create moving parts. • I can create moving wheel mechanisms to create different effects. • I can experiment with different fonts and graphic design features. • I can design pages of a storybook to include moving mechanisms and appropriate graphic features. • I can follow my designs to create a storybook with moving mechanisms. • I can evaluate how well my moving mechanisms work. • I can evaluate the overall effectiveness of my storybook.
Chinese Inventions Yr 5/6	• I explore how different transmissions create different movements. • I can use a crank to change the motion on a transmission from circular to linear motion.

Scheme of Work	Textiles
Puppets Yr 1/2	• I can explore a variety of puppets, identifying and labelling their features. • I can cut out felt using a simple template. • I can stick pieces of felt together to make a finger puppet. • I can add pieces of felt and other materials to a finger puppet to create features, such as eyes, hats and mouths. • I can use running stitch to join two pieces of fabric together. • I can use overstitch to join two pieces of fabric together. • I can sew a button onto a piece of fabric. • I can design a glove puppet for a particular purpose. • I can follow a design to make a glove puppet by sewing two pieces of fabric together and adding decorations. • I can evaluate my finished glove puppet by identifying what went well and what could be improved.

Seasonal stockings Yr 3/4	• I can explain the difference between the function and visual appeal of a product. • I can evaluate the function and visual appeal of a variety of Christmas stockings. • I can use pins to temporarily fasten two pieces of fabric together. • I can use running stitch, back stitch, over stitch and zigzag stitch to join two pieces of fabric together. • I can hide the finishing knot. • I can identify a variety of decorative techniques that have been used to decorate Christmas stockings. • I can sew a button, bead, sequin or pipe cleaner onto a piece of fabric. • I can embroider shapes and patterns into a piece of fabric. • I can use appliqué to add decoration to a piece of fabric. • I can design a Christmas stocking incorporating a range of decorative techniques. • I can use a template to cut out front and back pattern pieces. • I can follow a design to create a Christmas stocking. • I can evaluate the function and visual appeal of my finished Christmas stocking.
Fashion and Textiles Yr 5/6	• I can explain the process of turning raw cotton into cloth. • I know that products that are woven together are called textiles. • I know that different textiles have different properties, and can match these to their purpose. • I can identify straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, buttonhole stitch and overlock stitch on a variety of ready-made garments. • I can describe what the job of a fashion designer entails. • I can sew a basting stitch. • I can sew a whip stitch. • I can sew a hem. • I can sew back stitch. • I can sew an appliqué decoration. • I can use back stitch to embroider. • I know what a pattern piece is and why they are important when designing a garment. • I can design a drawstring bag, including the necessary pattern pieces. • I can use pattern pieces to measure, mark, cut and sew fabric. • I can sew design elements according to design criteria. • I can join two pieces of fabric by hand sewing, using an appropriate stitch. • I can evaluate my finished product against a set of design criteria.

Scheme of work	Inventions and Achievements
British Inventors Yr 3/4	• I can explain about the invention of the mackintosh. • I can investigate ways of making fabric waterproof. • I can explain about the invention of the world wide web. • I can describe how the invention of the internet has changed the world.
Chinese Inventors Yr 5/6	• I can explain how the invention of paper helped shape the world. • I can explain the traditional method for making paper. • I can test a variety of types of paper for strength, absorbency, opacity, etc. • I can make recycled paper. • I know how gunpowder was invented. • I can explain how the invention of gunpowder helped shape the world. • I can explain how the invention of the compass changed the world. • I can make a hanging/floating compass. • I can design and label my own compass. • I can explain what water-powered machines are and how they helped change the world. • I can explain why kites were first invented and how they were made. • I can make a variety of kite prototypes and test their effectiveness. • I can design, make and evaluate a kite according to specific design criteria.
Programming Pioneers Yr 5/6	• I know that Charles Babbage created the first mechanical computer. • I know that Ada Lovelace is referred to as the world's first computer programmer. • I know that Steve Jobs and Steve Wozniak co-founded Apple, Inc. to make the first Apple computers.