Design & Technology- Whole School Overview

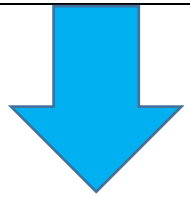
In D&T we build upon the learning in KS1 and by the end of year 6 we aim for all pupils to have studied a broad and progressive curriculum. We focus on analysing, designing, making & evaluating a range of real life products in order to solve problems for a varied audience. The process enables pupils to think creatively and draw upon knowledge from subjects such as science, mathematics, computing and art. Pupils are taught about the impact of design on everyday life and the contribution it makes to the wealth and culture of our nation. We focus on a range of key concepts, skills, knowledge & vocabulary, which ensures pupils have the necessary understanding to embrace the KS3 curriculum.

Year Group	Autumn Term	Spring Term	Summer Term
Y3	**Textiles** 2-D shape to 3-D product: Purse or Wallet	**Structures** Shell structures: Hedgehog home	**Mechanical Systems** Levers and Linkages: School Display
Y4	**Cooking and nutrition** Healthy and varied diet: Seasonal Soup	**Monitoring and Control** Screensaver	**Electrical Systems** Simple circuits and switches: Light
Y5	**Textiles** Combining different fabric shapes: 3D character toy.	**Mechanical Systems** Pulleys and Gears	**Structures** Frame structures: Group shelter
Y6	**Cooking and nutrition** Celebrating culture and seasonality: Savoury dish	**Electrical Systems** More complex switches and circuits: Game	**Monitoring and Control** Physical systems

Previous Learning from KS1			
Textiles	**Food technology**	**Structures**	**Generic D&T vocabulary**
Christmas Stocking • sewing • gluing • needle • scissors • join • running stitch	**Created a party tart.** • nutrition • healthy • varied diet • ingredients	**Aeroplane/underwater box** • wheel • axle • mechanism, • lever and slider • template • mock up	• evaluate • design brief • user • purpose • product • construction • materials • joining method •

Year 3			
	Autumn	**Spring**	**Summer**
Context	**Textiles** 2-D shape to 3-D product: Purse or Wallet *By the end of this unit, children will have researched existing products and created a design based on a set of criteria given by a client. Children will have continued to develop their sewing skills and will now be able to use a running stitch to join two pieces of material together and learn to fasten a button. During the evaluation stage, children will seek feedback from the client.*	**Structures** Shell structures: Hedgehog home *By the end of this unit, children will have researched environmental issues and created a design based on a set of criteria. Children will have developed their wood working skills to cut and join wood together to form a shell structure as part of a small team. During the evaluation stage, children will evaluate their product against the criteria.*	**Mechanical Systems** Levers and Linkages: School Display *By the end of this unit, children will have explored a range of levers and linkages created a design based on a given set of criteria. Children will have continued to develop their knowledge of levers and linkages to produce a school display. During the evaluation stage, children will seek feedback from children across school.*
Linked to school values	Together, we are problem solvers. Together, we do our best.	Together, we are problem solvers. Together, we are safe.	Together, we are problem solvers. Together, we are safe.
Recall vocabulary and knowledge.	• evaluate • design • product • user • purpose • fabric/material • running stitch	• design brief • evaluate • design • product • user • purpose • materials	• design brief • evaluate • design • product • user • purpose • flap, slider
Key concepts and vocabulary	**Evaluating** • design criteria • target group/user • function • joining methods • finishing techniques **Designing & Making** • template • seam • running stitch • appliqué • finish	**Evaluating** • design criteria • shell structure • free standing • three-dimensional • design criteria **Designing & Making** • prototype • strengthen • dimensions	**Evaluating** • design criteria • mechanism • lever • linkage • pivot **Designing & Making** • annotated sketch • guide or bridge • system - input and output

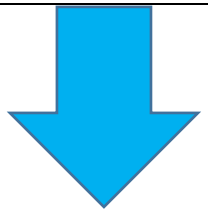
Project Introduction	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.
Evaluate (Existing products)	• To investigate and evaluate how design elements (appearance/function etc) of different wallets/purses are chosen for an intended user and purpose.	• To investigate and evaluate how existing shell structures consider choice of materials, components and techniques have been used to strengthen, stiffen and reinforce a structure	• To investigate and evaluate how different levers and linkage mechanisms are used within storybooks in context of the intended user's needs and wants.
Key events and individuals	• Understand how a key individual/event has influenced the development of the chosen product.	• Understand how a key individual/event has influenced the development of the chosen product.	• Understand how a key individual/event has influenced the development of the chosen product.
Design	• To generate a realistic template (paper) showing the design and annotate decisions that consider the needs of the user.	• To generate a card prototype to communicate measurements and other decisions that consider the needs of the user.	• To create an annotated sketch to communicate the idea and mechanics of a storybook, considering the needs and wants of the user.
Make	• To select and use appropriate fabrics and tools (needle, thread, scissors). • To thread a needle and tie it off. • To join two pieces of fabric together using a running stitch. • To join a button to the fabric for function.	• To select and use materials according to their properties. • To select and appropriately use tools to mark, measure, cut, score, shape and assemble pieces (bench hook, g clamp, junior hacksaw).	• To select and use equipment and materials to measure, cut and join to create moving images. • To use mechanical systems using levers and linkages in their product.
Evaluate (pupil product)	• To evaluate their own purse/wallet against the design criteria (success criteria), based on the user, purpose and others' views.	• To test and evaluate their hedgehog home against the design criteria (success criteria), based on the user, purpose, and others' views.	• To evaluate their storybook against the design criteria (success criteria), based on the user, purpose and others' views.



Year 4			
	Autumn	**Spring**	**Summer**
Context	**Food** Healthy and varied diet: Seasonal Soup ***By the end of this unit, children will have developed skills in using a paring knife to cut seasonal vegetables. Children will follow a simple recipe*** ***PRESCRIPTIVE – FOLLOW A RECIPE WITH ADDED CHOICES BASED ON CLIENT WANTS.***	**Monitoring and Control** Screensaver ***By the end of this unit children will use their computing skills to program and control Scratch to create a screensaver that meets a design brief.***	**Electrical Systems** Simple circuits and switches: Light *By the end of this unit, children will have evaluated products that use simple circuits and switches and used this to design a product based on a client's needs. Children will have continued to develop their knowledge of electrical circuits to create a light. During the evaluation stage, children will evaluate their product against the client's criteria.*
Linked to school values	Together, we are safe. Together, we do our best.	Together, we are problem solvers. Together, we do our best.	Together, we are problem solvers. Together, we are safe.
Recall vocabulary and knowledge.	• nutrition • healthy • varied diet • ingredients • senses • utensils • recipe	Taken from Year 3 computing: • input • event • code • sequence • repetition • loop • count-controlled loop • command	• construction • materials • user • purpose • design brief • join • product
Key concepts and vocabulary	**Evaluating** • fresh • sweet • savoury • reared • processed • seasonal • harvested **Designing & Making** • hygiene • presentation • moist • techniques and utensils	**Taken from Year 4 Spring computing** • co-ordinates • infinite loop • decomposition	**Evaluating** • series circuit • insulator • conductor • switches: push-to-make, push-to-break, toggle. **Designing and Making** • input & output device • connection • fault

Project Introduction	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.
Evaluate (Existing products)	• To understand the nutritional facts of ingredients with reference to the eat well plate. • To carry out sensory evaluations of a variety of ingredients and products (linked to the dish) and record evaluations using tables. • To understand the origins, history, culture and seasonality of different ingredients.	• To evaluate different screensavers used within the context of the intended user's needs and wants.	• To investigate and understand a range of existing battery powered products Series circuits incorporating switches, bulbs and buzzers. • To evaluate different circuits used within lights in the context of the intended user's needs and wants.
Key events and individuals	• Understand how a key individual/event has influenced the development of the chosen product.	• Understand how a key individual/event has influenced the development of the chosen product.	• Understand how a key individual/event has influenced the development of the chosen product.
Design	• To generate and clarify a list of ingredients needed to develop a recipe, in line with design criteria, based on appearance, taste, texture and aroma. • To plan the main stages of a recipe, listing ingredients, utensils and equipment.	• Through discussion create a design brief. • To generate, develop and communicate ideas about a screen saver.	• To develop and produce a realistic annotated sketch/ exploded diagram of the product and internal circuit, considering the needs and wants of the user.
Make	• To select and use appropriate utensils and equipment to prepare and combine ingredients.	• To apply their understanding of programming to produce a screensaver which meets the design brief.	• To select and use materials and electrical components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

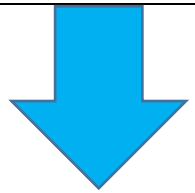
	• To cook prepared products using appropriate equipment and serve the dish with a focus on presentation.		• To understand and use a battery powered electrical system, including a switch, in their product.
Evaluate (pupil product)	• To evaluate their storybook against the design criteria, based on the user, purpose and others' views and begin to suggest strengths and areas for improvement in their work.	• To evaluate their screensaver against the design criteria, based on the user, purpose and others' views and begin to suggest strengths and areas for improvement in their work.	• To evaluate their storybook against the design criteria, based on the user, purpose and others' views and begin to suggest strengths and areas for improvement in their work.



Year 5			
	Autumn	**Spring**	**Summer**
Context	**Mechanical Systems** Pulleys and Gears: *By the end of this unit, children will have researched and explored existing products that function using pulleys and gears, and created a design based on a set of criteria from a client. Children will have used this knowledge to construct a mechanism using pulleys and/ or gears. During the evaluation stage, children will evaluate their product in conjunction with the client.*	**Textiles** Combining different fabric shapes: 3D character toy *By the end of this unit, children will have researched existing products and created a design based on a set of criteria from the client. Children will have developed their sewing skills to use an over stitch and backstitch to join fabric together. During the evaluation stage, children will evaluate their product in conjunction with the client.*	**Structures** Frame structures: Outdoor Shelter By the end of this unit, children will have evaluated various prototype structures to enable them to work together to create a large structure suitable for a small number of children to fit inside. During the evaluation stage, children will test their structure against the criteria and suggest areas of improvement.
Linked to school values	Together, we are problem solvers. Together, we are safe	Together, we are problem solvers. Together, we do our best.	Together, we are problem solvers. Together, we are safe. **TEAM**
Recall Key concepts and vocabulary	• axles • mechanisms, • levers and sliders • mock up • slider • lever • series circuit • switches	**Evaluating** • design criteria • target group/user • function • joining methods • running stitch • seam • prototype	• user • purpose • design brief • joining methods • structure • free standing • prototype

Key concepts and vocabulary	**Evaluating** • pulley • axle • drive belt • spindle • driver • follower • ratio • transmit • input • process • output	**Evaluating** • fastenings • authentic **Designing and Making** • seam allowance • wadding • hem • overstitch • backstitch • blanket stitch	**Evaluating** • triangulation • stability • reinforce • innovation **Designing and Making** • design specification • stiffen • strengthen • functional
Project introduction	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria. • To generate details regarding the clients' needs and wants through a questionnaire.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.
Evaluate (existing products)	• To analyse products and understand that mechanical and electrical systems have an input, process and an output. • To analyse products and understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.	• To investigate and analyse textile products linked to the context of the intended user. • To test products and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose and understand that a 3D textile product can be made from a combination of pattern pieces, fabric shapes and different fabrics.	• To investigate and understand a range of existing frame structures. Detailed focus on frame structures in the context of the intended user's needs and wants. • To carry out research **using web-based resources to u**nderstand how to strengthen, stiffen and reinforce 3-D frameworks.
Key events and individuals	• Understand how a key individual/event has influenced the development of the chosen product.	• Understand how a key individual/event has influenced the development of the chosen product.	• Understand how a key individual/event has influenced the development of the chosen product.
Design	• To generate ideas by carrying out research suing web-based resources.	• To develop a simple step-by-step design specification to guide the development of	• To generate a prototype using art straws and focusing on the strengthening of joins.

	• To generate ideas using Tradcard resources to create a prototype • To communicate ideas through design specification, annotated exploded drawings from different views. CAD (if possible).	their ideas, taking account of constraints (time, resources, money etc.) • Develop, model and communicate ideas through annotated templates/ pattern pieces and mock-up/prototype using paper (CAD if possible).	• To develop a simple step-by-step design specification, with sketches, to guide the development of their ideas, taking account of constraints (time, resources, money etc.)
Make	• To competently select from and use a range of tools and equipment to make products that are accurately assembled and well finished.	• To competently select from and use appropriate tools and equipment to accurately assemble and use finishing and decorative techniques suitable for the product to demonstrate strengthening and reinforcement of fabrics where appropriate.	• To competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make and strengthen frameworks and use finishing and decorative techniques suitable for the product.
Evaluate (pupil product)	• To test product with intended used and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose, considering others vies towards areas for development.	• To critically evaluate their product against the success criteria and consider the views of others (including the Y2 client) to identifying strengths and areas for development	• To critically evaluate their structure against the design criteria, carrying appropriate tests and identifying strengths and areas for development.



Year 6			
	Autumn	**Spring**	**Summer**
Context	**Food** Celebrating culture and seasonality: Vegetable Chilli *By the end of this unit, children will have worked in small teams to prepare and cook a savoury dish (vegetarian chilli dish & side salad/dip) for their guest, based on given criteria and the needs and preferences. Children will have analysed a range of ingredients that could be used using knowledge of healthy eating, food groups and a focus on celebrating culture and seasonality. Children would have practised age appropriate preparation skills using select utensils and equipment. Children will prepare, cook and serve their main and side dish to their guest. During the evaluation stage, children will evaluate their final dish in conjunction with their guest.*	**Electrical Systems** More complex switches and circuits: Game By the end of this unit, using skills learnt in Year 4 and during science lessons, children will design and make an interactive game using electrical components. During the evaluation stage, children will have evaluated their product against the client's criteria.	**Monitoring and Control** Physical systems: Monitoring and control – security system. By the end of this unit children will use their computing skills to program and control Scratch to create a real-world application that meets a design brief.
Linked to school values	Together, we are problem solvers. Together, we are safe	Together, we are problem solvers. Together, we do our best.	Together, we are problem solvers. Together, we do our best.
Recall vocabulary and knowledge.	• fresh • sweet • savoury • reared • processed • seasonal • harvested • hygiene • presentation • techniques and utensils	• series circuit • insulator • conductor • switches: push-to-make, push-to-break, toggle. • input & output device • connection • fault	• program • microcontroller • system • output devices • input devices • process • control • loop
Key concepts and vocabulary	**Evaluating** • vitamins • nutrients • seasonality • intolerance • source	**Evaluating** • Parallel circuit • monitor • innovation • reed switch • tilt switch	**Evaluating** • pseudocode or flowchart algorithm • iteration **Designing and Making** • variables

	Designing and Making • combine • utensils	**Designing and Making** • flowchart • program	• selection
Project introduction	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.	• To understand the user (client) and purpose of the intended product through a design brief to create a set of design criteria.
Evaluate (existing products)	• To understand the nutritional facts of ingredients with reference to the eat well plate. • To carry out sensory evaluations of a variety of ingredients and products (linked to the dish) and record evaluations using tables. • To understand the origins, history, culture and seasonality of different ingredients.	• To investigate and evaluate electrical products that include a computer control program that works automatically in response to changes in the environment using web-based research.	• To communicate ideas through discussion to create a programmable product which meets the user's needs.
Key events and individuals	• Understand how a key individual/event has influenced the development of the chosen product.	• To investigate famous inventors who developed ground-breaking electrical systems and components.	• Understand how a key individual/event has influenced the development of the chosen product.
Design	• To generate and clarify a list of ingredients needed to develop a recipe, in line with design criteria, based on appearance, taste, texture and aroma. • To plan the main stages of a recipe, listing ingredients, utensils and equipment.	• To understand the needs and wants of the client through their feedback on mock-up/prototype. • To communicate innovative ideas to the client through a mock-up/prototype, changing the design based around their needs and wants. • Develop an exploded diagram to detail key functions and workings of the product	• To use their understanding of computing to program, monitor and control a security system.
Make	• To select and use appropriate utensils and equipment to prepare and combine ingredients.	• To competently and accurately assemble materials and securely connect electrical components to produce a reliable, functional product.	• To program and create and test a programmable product.

	• To cook prepared products using appropriate equipment and serve the dish with a focus on presentation.	• Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment.	
Evaluate (pupil product)	• To evaluate their cooked meal against the design criteria, based on the user, purpose and others' views and begin to suggest strengths and areas for improvement in their work.	• Client to test and critically evaluate their product against the success criteria and consider the views of others to identifying strengths and areas for development.	• To test and evaluate the product against the client criteria.