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Vision/ Intent

Our vision for D&T is to foster a creative and innovative learning environment that empowers our pupils to become critical thinkers, problem solvers, and confident creators of the future. Through D&T, we aim to equip students with the skills and mindset needed to thrive in an ever-evolving world, preparing them for future careers and challenges.

Types of Knowledge in DT

Design | **Make** | **Evaluate** | **Technical knowledge**

Some key areas appear less frequently than others, for example Textiles, and this is deliberate. The National curriculum statements below show that working with textiles is only a small element of the Make strand and many of the making techniques covered in our Textiles units are also covered with a range of materials in other units, such as the use of templates, modelling, measuring and marking out, cutting, shaping and joining.

Make (KS1)	Make (KS2)
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	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

Similarly in Year 2, the coverage of key areas is deliberately imbalanced as there are two Mechanisms units. This is because there is strong progression between the Y1 Structures: Constructing a windmill and the Y2 Mechanisms: Fairground wheel and then again with the Y2 Mechanisms: Making a moving monster. To omit one of these units would negatively impact on the progression.

Because our Design and technology units are designed to take four lessons, we have also included some suggestions for stand alone lessons which you could use if you find that you have lessons 'to spare.' Please note that the skills and knowledge from these stand alone lessons is **not** included on the *Progression of knowledge and skills – combined.*

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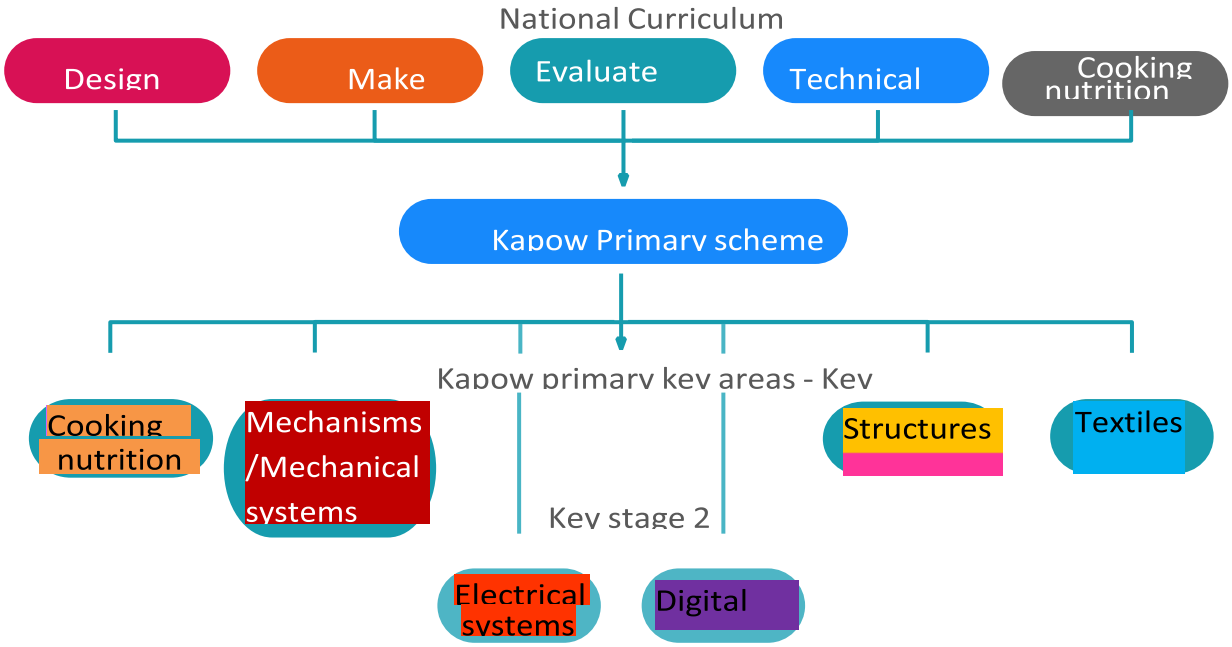

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	Progression						
Themes within subject	**Year R (Ducklings)**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Design	**Structure-Junk modelling** **-Making verbal plans and material choices.** • Developing a junk model. **Structure- Boats** **• Designing a junk model boat.** • Using knowledge from exploration to inform design. **Textiles-Book marks** **• Designing a bookmark.** • Discussing what a good design needs. • Designing a simple pattern with paper. • Choosing from available materials	**Structure-Constructing a windmill.** **• Learning the importance of a clear design criteria** • Including individual preferences and requirements in a design. **Textiles—Puppets** **• Using a template to create a design for a puppet**. **Cooking and Nutrition-Smoothies** **• Designing smoothie carton packaging by-hand.**	**Structures – Baby Bear's Chair** **• Generating and communicating ideas using sketching and modelling.** • Learning about different types of structures, found in the natural world and in everyday objects **Mechanisms – Fairground wheel** **• Selecting a suitable linkage system to produce the desired motion**. • Designing a wheel. **Mechanisms – Making a moving monster.** **• Creating a class design criteria for a moving monster.** • Designing a moving monster for a specific audience in accordance with design criteria.	**Cooking and Nutrition-Eating Seasonally** • Designing a recipe for a savoury tart. **Structures-Constructing castles.** **• Designing a castle with key features to appeal to a specific person/purpose**. • Drawing and labelling a castle design using 2D shapes, labelling: - the 3D shapes that will create the features - materials needed and colours. **Digital world-Electronic charm** **• Problem solving by suggesting which features on a micro: bit might be useful and justifying my ideas.** • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point-of-sale badge.	**Mechanisms – Making a slingshot car.** **• Designing a shape that reduces air resistance**. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed because of air resistance. **Structure – Pavilions.** **• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.** • Building frame structures designed to support weight. **Electrical systems – Torches** **• Designing a torch, considering the target audience and creating both design and success criteria focusing on features of**	**Structure-Playgrounds** **• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.** **Mechanisms – Pop-up books** **• Designing a pop-up book which uses a mixture of structures and mechanisms.** • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book**.** **Cooking and Nutrition-Designing a recipe.** **• Writing an amended method for a recipe to incorporate the relevant changes to ingredients.**	**Electrical systems – Steady hand** **• Designing a steady hand game - identifying and naming the components required.** • Drawing a design from three different perspectives. **Digital world – Navigating the world.** **• Writing a design brief from information submitted by a client.** • Considering and suggesting additional functions for my navigation tool. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD. **Textiles – Cushion creations** **• Designing a cushion in accordance with a specification**

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					individual design ideas.	• Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Designing appealing packaging to reflect a recipe. • Researching existing recipes to inform ingredient choices.	**linked to set of design** criteria. • Annotating designs, to explain their decisions
Make	**Structure- Junk Modelling** • **Making a boat that floats and is waterproof, considering material choices.** **Structure -Boats** • **Improving fine motor/scissor skills with a variety of materials.** • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together. **Textile-Bookmarks** • **Developing fine motor/cutting**	**Structure-Constructing a windmill.** • **Making stable structures from card, tape and glue.** • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. **Textiles—Puppets** • **Cutting fabric neatly with scissors**.	**Structures – Baby Bear's Chair** • **Making a structure according to design criteria.** • Creating joints and structures from paper/card and tape. **Mechanisms – Fairground wheel** • **Selecting materials according to their characteristics.** • Following a design brief. **Mechanisms – Making a moving monster.** • **Making linkages using card for levers and split pins for pivots.** • Experimenting with linkages	**Cooking and Nutrition-Eating Seasonally** • **Chopping fruit and vegetables safely to make a smoothie.** • Juicing fruits safely to make a smoothie. • Tasting seasonal ingredients. **Structures-Constructing castles.** • **Constructing a range of 3D geometric shapes using nets.** • Creating special features for individual designs. • Making facades from a range of recycled material **Digital world-Electronic charm**	**Mechanisms – Making a slingshot car.** • **Measuring, marking, cutting and assembling with increasing accuracy.** • Making a model based on design. **Structure – Pavilions.** • **Creating a range of different shaped frame structures.** • Making a variety of free-standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding.	**Structure-Playgrounds** • **Building a range of play apparatus structures drawing upon new and prior knowledge of structures.** • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures **Mechanisms – Pop up books.** **-Following a design brief to make a pop up book, neatly and with focus on accuracy.** • Making mechanisms and/or	**Electrical systems – Steady hand** • **Making and testing a circuit.** • Accurately cutting, folding and assembling a net. • Incorporating a circuit into a base. **Digital world – Navigating the world.** **- Develop 3D CAD skills to produce a virtual model.** • Explaining material choices and why they were chosen as part of a product concept. • Programming an N,E, S, W cardinal compass.

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	skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practice threading.	• Using joining methods to decorate a puppet. • Sequencing the steps taken during construction. **Cooking and Nutrition- Smoothies** **• Chopping fruit and vegetables safely to make a smoothie.** • Juicing fruits safely to make a smoothie.	adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly.	**• Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm** • Following a list of design requirements.	**Electrical systems – Torches** **• Making a torch with a working electrical circuit and switch.** • Using appropriate equipment to cut and attach materials.	structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. **Cooking and Nutrition- Designing a Recipe** • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe	**Textiles – Cushion creations** **• Sewing accurately with evenly spaced, neat stitches.** • Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches, and following the edge.
Evaluate	**Structure-Junk modelling** **• Giving a verbal evaluation of their own and others' junk models with adult support.** • Checking to see if their model matches their plan. • Considering what they would do	**Structure- Constructing a windmill.** **• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.** • Suggest points for improvements.	**Structures – Baby Bear's Chair** **• Exploring the features of structures.** • Comparing the stability of different shapes. **Mechanisms – Fairground wheel** **• Evaluating different designs.**	**Cooking and Nutrition-Eating Seasonally** **• Describing the benefits of seasonal fruits and vegetables and the impact on the environment.** • Suggesting points for improvement when making a seasonal tart.	**Mechanisms – Making a slingshot car.** **• Evaluating the speed of a final product based on the effect of shape on speed and the accuracy of workmanship on performance.**	**Structure- Playgrounds** **• Improving a design plan based on peer evaluation.** • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure.	**Electrical systems – Steady hand** **• Testing own and others finished games, identifying what went well and making suggestions for improvement.** **Digital world – Navigating the world.**

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	differently if they were to do it again. • Describing their favourite and least favourite part of their model. **Structure-Boats** **• Making predictions about, and evaluating different materials to see if they are waterproof.** • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently • Investigating the how the shapes and structure of a boat affect the way it moves. **Textile-Bookmarks** **• Reflecting on a finished product and comparing to their design.**	**Cooking and Nutrition-Smoothies** **• Tasting and evaluating different food combinations.** • Describing appearance, smell, and taste. • Comparing their own smoothie with someone else's. **Textiles-Puppets** **• Reflecting on a finished product, explaining likes and dislikes.**	• Testing and adapting a design. **Mechanisms – Making a moving monster.** **•Evaluating own designs against design criteria.** • Using peer feedback to modify a final design.	**Structures-Constructing castles.** **• Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design.** • Suggesting points for modification of the individual designs. **Digital world-Electronic charm** **• Analysing and evaluating wearable technology.** • Using feedback from peers to improve design.	**Structure – Pavilions.** **•Evaluating structures made by the class** • Considering effective and ineffective designs. **Electrical systems – Torches** **• Evaluating electrical products.** • Testing and evaluating the success of a final product.	**Mechanical Systems-Pop up books.** **• Evaluating the work of others and receiving feedback on own work.** • Suggesting points for improvement **Cooking and Nutrition** **• Identifying the nutritional differences between different products and recipes.** • Identifying and describing healthy benefits of food groups.	**• Describing how the product concept fits the client's request and how it will benefit the customers** • Identifying key industries that utilise 3D CAD modelling and explaining why. **Textiles – Cushion creations** • Reflecting on their work continually throughout the design, make and evaluate process.
Technical Knowledge	**Structure-Junk Modelling** **• To know there are a range to different materials that can be used to make a model and that**	**Structure-Constructing a windmill.** **• To understand that the shape of materials can be changed to improve the strength and**	**Structures – Baby Bear's Chair** **• To know that shapes and structures with wide, flat bases or legs are the most stable.**	**Cooking and Nutrition-Eating Seasonally** **• To know that not all fruits and vegetables can be grown in the UK.**	**Mechanisms – Making a slingshot car.** **• To understand that all moving things have kinetic energy.** • To understand that kinetic energy	**Structure-Playgrounds** **-To know that structures can be strengthened by manipulating materials and shapes.**	**Electrical systems – Steady hand** **• To know that batteries contain acid, which can be dangerous if they leak.**

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	they are all slightly different. • Making simple suggestions to fix their junk model. **Structure-Boats** **To know that 'waterproof' materials are those which do not absorb water.** • To know that some objects float and others sink. • To know the different parts of a boat. **Textile-Bookmarks** **• To know that a design is a way of planning our idea before we start.** • To know that threading is putting one material through an object.	**stiffness of structures.** • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. **Textiles—Puppets** **• To know that 'joining technique' means connecting two pieces of material together.** • To know that there are various temporary methods of joining fabric by using staples. Glue or pins. **Cooking and Nutrition-Smoothies** **• To know that a blender is a machine which mixes ingredients together into a smooth liquid.** • To know that a fruit has seeds. • To know that fruits grow on trees or vines	• To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. **Mechanisms – Fairground wheel** • To know that different materials have different properties and are therefore suitable for different uses. **Mechanisms – Making a moving monster.** **• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.** • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working.	• To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. **Structures-Constructing castles.** **• To understand that wide and flat based objects are more stable.** • To understand the importance of strength and stiffness in structures. **Digital world-Electronic charm** **• To understand that, in programming, a 'loop' is code that repeats something again and again until stopped.** • To know that a micro:bit is a pocket-sized, codable computer. • To know that a simulator can replicate the functions of an existing piece of technology.	is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. **Structure – Pavilions.** **• To understand what a frame structure is.** • To know that a 'free-standing' structure is one which can stand on its own. **Electrical systems – Torches** **• To understand what a frame structure is.** • To know that a 'free-standing' structure is one which can stand on its own.	- To know that a prototype is a cheap model to test a design idea. **Mechanisms – Pop up Books** **• To know that mechanisms control movement.** • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. **Cooking and Nutrition-Design a recipe** **• To understand where meat comes from – learning that beef is from cattle and how beef is reared and processed.** • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that I can use a nutritional calculator to see how	• To know the names of the components in a basic series circuit, including a buzzer. **Digital world – Navigating the world.** **• To know that accelerometers can detect movement.** • To understand that sensors can be useful in products as they mean the product can function without human input. **Textiles – Cushion creations** **• To understand the importance of consistently sized stitches.** -To know the benefits to the environment in reusing materials. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric.

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						healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens. when these foods mix with raw meat or unclean objects. • To know that coloured chopping boards can prevent cross-contamination. • To know that nutritional information is found on food packaging. • To know that food packaging serves many purposes.	
Projects	Autumn term - Junk modelling. Spring term- Bookmarks. Summer term- Boats.	Autumn term - Constructing a windmill. Spring term- Puppets. Summer term- Smoothies	Autumn term- Baby Bear's Chair Spring term- Fairground wheel Summer term- Making a moving monster.	Autumn term– Eating Seasonally Spring term- Constructing castles. Summer term- Electronic charm	**Spring term- Making a slingshot car.** Summer 1term- Pavilions. **Summer2 term- Torches**	Autumn term- Playgrounds- Pop up books- Spring term Designing a recipe-Summer	**Spring1 term– Steady hand.** **Spring2 term- Navigating the world.** Summer term- Cushion creations
Key Vocabulary	**Junk Modelling** • Stick • Cut • Bend • Slot • Scissors • Measure • Materials	**Constructing a Windmill** • Client • Design • Evaluation • Net • Stable • Strong	**Structure- Baby Bear's Chair Function** • Man-made • Mould • Natural • Stable • Stiff	**Cooking and nutrition: Eating seasonally** • Arid • Climate • Complementary • Country • Export	**Mechanical systems: Making a slingshot car** • Aesthetic • Air resistance • Chassis • Design	**Structure Playground** Bench hook • Cladding • Coping saw • Design • Dowel • Evaluation	**Electrical systems: Steady hand game** • Assemble • Battery • Battery pack • Benefit • Bulb

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	• Fix **Textiles Bookmarks** -Thread • Weave • Pattern • Sew • Sewing needle • Embroider • Design • Evaluate **Structure Boats** -Waterproof • Absorb • Prediction • Variable • Experiment • Investigation • Float • Sink • Junk	• Test • Weak • Windmill **Textiles Puppets** • Decorate • Design • Fabric • Glue • Model • Hand puppet • Safety pin • Staple • Stencil • Template **Cooking - Smoothies** • Blender • Fruit • Healthy • Ingredients • Recipe • Smoothie • Vegetable • Seed • Root • Leaf • Stem	• Strong • Structure • Test • Weak **Mechanisms: Fairground wheel** • Axle • Decorate • Evaluation • Ferris wheel • Mechanism • Stable • Strong • Test • Waterproof • Weak **Mechanisms: Making a moving monster** • Input • Lever • Linear motion • Linkage • Mechanical • Mechanism • Motion • Oscillating motion • Output • Pivot • Reciprocating motion • Rotary motion	• Import • Mediterranean • Mock-up • Mountain • Peel • Polar • Seasonal **Structures: Constructing a castle** • 2D shapes • 3D shapes • Castle • Design criteria • Evaluate • Facade • Feature • Flag • Net • Recyclable • Scoring • Stable • Strong • • Tab • Weak **Digital world: Wearable technology** • Analyse • Annotate • Badge • CAD • Control • Design criteria • Develop • Digital • Digital revolution • Digital world	• Design criteria • Function • Graphics • Kinetic energy **Structures: Pavilions** • Aesthetic • Cladding • Design criteria • Evaluation • Frame structure • Function • Inspiration • Pavilion • Reinforce • Stable • Structure **Electrical systems: Torches** • Battery • Bulb • Buzzer • Cell • Component • Conductor • Copper • Design criteria	• Feedback • Idea • Jelutong • Landscape • Mark out • Measure • Modify • Natural materials • Plan view • Playground • Prototype • Reinforce **Pop up Books** Aesthetic • Caption • Design • Design brief • Design criteria • Exploded diagram • Function • Input • Linkage • Mechanism • Motion • Output • Pivot **Design a Recipe** Abattoir • Adaptation • Balanced • Beef • Brand • Cook • Cross-contamination • Develop • Enhance • Equipment • Farm • Label • Measure • Nutrient • Nutrition • Nutritional value	• Bulb holder • Buzzer • Circuit • Circuit symbol • Component • Conductor **Digital world: Navigating the world** • 3D CAD • Application (apps) • Biodegradable • Boolean • Cardinal compass • Client • Compass • Concept • Convince • Corrode • Duplicate • Environmentally friendly **Textiles: Cushions** • Accurate • Adapt • Annotate • Design • Design criteria • Detail • Fabric • Fastening • Knot • Properties • Running stitch • Seam • Sew

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Overview of Kapow Topics

	Autumn term		Spring term		Summer term	
Reception	**D.T.** Structures – Junk modelling (6 lessons)	**Art and design** Drawing – Marvellous marks (6 lessons)	**D.T.** Textiles – Bookmarks (6 lessons)	**Art and design** Painting and mixed media – Paint my world (6 lessons)	**D.T.** Structures – Boats (6 lessons)	**Art and design** Sculpture and 3D – Creation station (6 lessons)
Year 1	**D.T.** Structures – Constructing windmills (4 lessons)	**Art and design** Drawing – Make your mark (5 lessons)	**D.T.** Textiles – Puppets (4 lessons)	**Art and design** Sculpture and 3D – Paper play (5 lessons)	**D.T.** Food – Fruit and vegetables (4 lessons)	**Art and design** Painting – Colour Splash (5 lessons)
Year 2	**Art and design** Craft and design – Map it out	**D.T.** Structures – Baby Bear's Chair	**Art and design** Painting and mixed media	**D.T.** Mechanisms – Fairground wheel	**Art and design**	**D.T.** Mechanisms – Making a

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	(5 lessons)	(4 lessons)	– Life in Colour (5 lessons)	(4 lessons)	Sculpture and 3D – Clay houses (5 lessons)	moving monster (4 lessons)
Year 3	**Art and design** Painting and mixed media – Prehistoric painting (4 lessons) **D.T.** Food – Eating Seasonally (4 lessons)		**Art and design** Drawing – Growing artists (5 lessons)	**D.T** Constructing castles (4 Lessons)	**Art and design** Sculpture and 3D – Abstract shape and space (5 lessons)	**D.T.** Digital world Electronic charm (4 lessons)

	Autumn term		**Spring term**		**Summer term**	
Year 4	**Art and design** Drawing – Power prints (5 lessons)	**Art and design** Craft and design – Fabric of nature (5 lessons)	**Art and design** Painting and mixed media – Light and dark (5 lessons)	**D.T.** Mechanisms – Making a slingshot car (4 lessons)	**D.T.** Structure – Pavilions (4 lessons)	**D.T.** Electrical systems – Torches (4 lessons)
Year 5	**D.T.** Structure – Playgrounds (4 lessons)	**Art and design** Sculpture and 3D –	**D.T.** Mechanisms – Making a pop-up book (4 lessons)	**Art and design** Drawing – I need space (5 lessons)	**D.T.** Food – What could be healthier? (4 lessons)	**Art and design** Painting and mixed media – Portraits

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		Interactive installation (5 lessons)				(5 lessons)
Year 6	**Art and design** Craft and design: Photo opportunity (5 lessons)	**Art and design** Drawing – Drawing: Make my voice heard (5 lessons)	**D.T.** Electrical systems – Steady hand (4 lessons)	**D.T.** Digital world – Navigating the world (4 lessons)	**Art and design** Sculpture and 3D – Making memories (5 lessons)	**D.T.** **D.T.** Textiles – Cushion creations (4 lessons)

D.T. units are in blue

Art units are in orange