Design and Technology Curriculum Document

Intent Statement

At Hartsfield, we aim to inspire children to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation and evaluation. We want to provide children with a real-life context for learning and prepare them to deal with an ever-changing technological world, encouraging them to become creative and resourceful problem solvers, working both independently and as members of a team.

We will allow children to broaden their knowledge of the subject by giving them opportunities to research different inventors allowing them to appreciate the importance of the subject in our world. In our lessons, we will follow the design, make and evaluate process in the following areas: cooking and nutrition, mechanical systems, textiles, electrical systems and structures. The design process will allow children to take risks, as it will be an opportunity for children to explore their ideas. The make process will allow children to be practical to develop their skills. The evaluation process will give children opportunities to reflect and self-criticise. Design Technology at Hartsfield will allow children freedom to explore and create but also allow children to go on a journey and instil the resilience that is needed to get to our end product.

Design Technology is a fully inclusive subject and reasonable adjustments will be made to support our SEN and PPG children, through additional support and resources.

Implementation Statement

The Design Technology teaching throughout Hartsfield follows the National Curriculum design, make and evaluate cycle with a focus on technical knowledge and cooking and nutrition. We use a scheme called Kapow which has a clear progression of skills and knowledge within these five strands (See separate document). At Hartsfield, Design Technology is to be taught in all year groups through at least one topic per term, which includes one topic relating to food and the other two topics occurring on a two yearly cycle.

The Kapow scheme is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing all pupils to revisit and build on previous learning. Lessons incorporate a range of teaching strategies from independent tasks to paired and group work including practical hands on inventive tasks. The variety in the scheme means that lessons are engaging and appeal to those with a variety of learning styles. Differentiated guidance is available for every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils are also available.

Whole School

Design and Technology Skills Progression

Structures		EYFS	KS1	LKS2	UKS2
Skills	Design	Making verbal plans and material choices	Learning the importance of a clear design criteria. Including individual preferences and requirements in a design	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.	Designing a stable structure that is able to support weight. Creating a frame structure with a focus on triangulation.
	Make	Improving fine motor/scissor skills with a variety of materials. Joining materials together in a variety of ways (temporary and permanent). Describing their junk model, and how they intend to put it together.	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.	Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. Making facades from a range of recycled materials.	Making a range of different shaped beam bridges. Using triangles to create truss bridges that span a given distance and support a load. Building a wooden bridge structure. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saws safely. Identifying where a structure needs reinforcement and using card corners for support. Explaining why selecting appropriating materials is an important part of the design process.

					Understanding basic wood functional properties.
	Evaluate	Giving a verbal evaluation of their own and others' junk models with adult support by describing their favourite and least favourite part of their and others model.	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.	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.	Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. Suggesting points for improvements for own bridges and those designed by others.
Knowledge	Technical	To know there are a range to different materials that can be used to make a model and that they are all slightly different. Making simple suggestions to fix their junk model.	To understand that the shape of materials can be changed to improve the strength and 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. To begin to understand that different structures are used for different purposes. To know that a structure is something that has been made and put together.	To understand that wide and flat based objects are more stable. To understand the importance of strength and stiffness in structures.	To understand some different ways to reinforce structures. To understand how triangles can be used to reinforce bridges. To know that properties are words that describe the form and function of materials. To understand why material selection is important based on properties. To understand the material (functional and aesthetic) properties of wood.
	Additional		To know that windmill turbines use wind to turn. To know the three main parts of a windmill are the turbine, axle and structure	To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose.	To understand the difference between arch, beam, truss and suspension bridges. To understand how to carry and use a saw safely.

				To know that a façade is the front of a structure. To understand that a castle needed to be strong and stable to withstand enemy attack. To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. To know that a design specification is a list of success criteria for a product.	

EYFS Design and Technology

Learning Objectives and Knowledge Overview

	Autumn term	Spring term	Summer term
Main Topic	• Do you want to be my friend? • Let's Celebrate!	• Will you read me a story? • Are we there yet?	• All Creatures Great and Small • Transitions
Key Texts	• Goldilocks and the Three Bears • The Colour Monster • Ruby's Worry • Owl Babies • Kippers Birthday • Rama and Sita Diwali story • Kippers Birthday • The Nativity Story	• The Gingerbread Man • Cinderella • The Three Little Pigs • The Three Billy Goats Gruff • The Chinese New Year Zodiac Story • Man on the Moon • Supertato • The Gruffalo	• Handa's Surprise • Tinga Tinga Tales • What the Ladybird Heard • Farmer Duck • The Very Hungry Caterpillar • What the Ladybird heard on Holiday • Jack and the Beanstalk
Visits/Walks	• Signs of Autumn walk • Visit from fire brigade • Signs of winter Walk	• Library Visit • Signs of Spring walk • Local trip (walking distance)	• Signs of Summer Walk • School Trip
Weekly Topics	• Settling in • Fulltime • Baseline • Autumn • Harvest • Spooky Things • Diwali Fireworks • Potions • Friends • Light and Dark • Christmas • Panto Week • Our Performance	• Goldilocks and the Three Bears • The Three Little Pigs • The Three Billy Goats Gruff • Chinese New Year • The Gingerbread man • The Gruffalo • Space • Supertato • Superheros • Easter	• Seasons • Elmer • Handa's Surprise • Going to the Library • Herrings Green • The Queen's Jubilee • Father's Day • Sport's Week •

EAD Expressive, Art and Design.	• **Role play experiences – based around familiar experiences** • **Small world – seasonal/theme** • **Introduce painting, collage and modelling. Simple colour mixing** • Introducing different art skills E.g. Painting, collage etc. • Learn and join in with familiar and new songs. • Develop storylines in their pretend play.	• **Role play experiences – book and fantasy inspired** • **Small world – theme/book inspired** • **Movement and music linked to events and children's interests** • **Instruments – develop understanding and use of instruments** • **Develop painting, collage and modelling skills. Explore texture and mixed media.** • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Listen attentively, move to and talk about music expressing their feelings and responses. • Sing in a group or on their own increasingly matching the pitch and following the melody. • Continue to develop story lines in their pretend play.	• **Role play experiences- preparing for year 1/children interests** • **Small world – children interest** • **Movement and music linked to events and children's interests** • **Planning and creating for a purpose, adapting and evaluating.** • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Listen attentively, move to and talk about music expressing their feelings and responses. • Watch and talk about dance and performance art, expressing their feelings and responses. • Continue to develop story lines in their pretend play. • Explore and engage in music making and dance, performing solo or in groups.

EYFS Design and Technology - Progression and Assessment

	Early Learning goals
Junk modelling **Structures**	**ELG Fine Motor Skills:** Use a range of small tools, including scissors, paint brushes and cutlery. **ELG: Creating with Materials**: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. **ELG: Speaking:** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. **ELG: Fine Motor Skills:** Use a range of small tools, including scissors, paint brushes and cutlery.
Food **Fruit and vegetables**	**ELG: Speaking:** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. **ELG: Managing self:** Manage their own basic hygiene and personal needs, including…understanding the importance of healthy food choices **ELG: Fine Motor Skills:** Use a range of small tools, including scissors, paint brushes and cutlery.
Weaving **Textiles**	**ELG: Speaking:** Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. **ELG: Creating with Materials**: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. **ELG: Fine Motor Skills:** Use a range of small tools, including scissors, paint brushes and cutlery.

Year 1 Design and Technology - Learning Objectives and Knowledge Overview

Design Technology - Learning Objectives	Autumn	Spring	Summer
Design • design purposeful, functional, appealing products for themselves and other users based on design criteria	Introduce	Revisit	Revisit
• generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	Introduce	Revisit	Revisit
Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]	Introduce	Revisit	Revisit
• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	Introduce	Revisit	Revisit
Evaluate • explore and evaluate a range of existing products	Introduce		Revisit
• evaluate their ideas and products against design criteria	Introduce		Revisit
Technical Knowledge • build structures, exploring how they can be made stronger, stiffer and more stable	Introduce		Revisit
• explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	Introduce		Revisit
Cooking & Nutrition • use the basic principles of a healthy and varied diet to prepare dishes		Introduce	
• understand where food comes from.		Introduce	

Design and Technology - Curriculum	Autumn	Spring	Summer
	Moving Story Books • Explore sliders and movement using templates. • Design and make a moving story book with levers. • Test and evaluate their book.	**Making Smoothies** • Identify fruits and vegetables and explore which part of the plant they come from. • Taste different fruit and vegetables describing their appearance, taste and smell. • Design and make smoothies and packaging to reflect the ingredients.	**Constructing a Windmill** •Design a structure •Assemble a structure • Design, decorate and build a windmill for a mouse. •Test and evaluate the windmills

Year 1 Design and Technology - Progression and Assessment

	Working Towards	Age Related Expectation	Greater Depth
Mechanisms	(Working with Support) <u>Exploring levers and sliders</u> - Exploring mechanisms, learning that levers and sliders can make things move, creating moving models that use levers and sliders and using the vocabulary to describe movement (up, down, left, right, vertical and horizontal) <u>Design</u> - Designing a moving story book, drawing background pictures and the moving parts, deciding whether to use a lever or a slider on each page and labelling the movement of each <u>Construction</u> - Constructing a moving picture by: drawing a background, drawing and cutting the moving parts, making levers and sliders and then putting all the parts together <u>Testing and Evaluation</u> - Evaluating a finished product by reviewing it against the design criteria and testing it with its intended audience	<u>Exploring levers and sliders</u> - Identifying whether a mechanism is a lever or slider and determining what movement the mechanism will make. Exploring levers and sliders <u>Design</u> - Clearly labelling drawings to show which parts of the design will move and in which direction. <u>Construction</u> - Creating a picture which meets the design criteria, with parts that move purposefully as planned. <u>Testing and Evaluation</u> - Evaluating the main strengths and weaknesses of a finished product and suggesting alterations.	<u>Exploring levers and sliders</u> - Identifying if a mechanism is a lever or slider and being able to determine what movement the mechanism will make. Explaining how a mechanism can be adapted, using bridges or guides to control the movement <u>Design</u> - Clearly labelling the moving parts and mechanism of a design that has multiple parts, moving in different ways on each page <u>Construction</u> - Creating a finished product with multiple parts that move purposefully as planned. Where parts do not move as planned they are able to explain why and how they would be fixed. The design also includes guides and bridges <u>Testing and Evaluation</u> - Evaluating the main strengths and weaknesses of a finished product and suggesting meaningful alterations that will address any weakness

Food **Fruit and vegetables**	- Learning how to determine if a food is a fruit or a vegetable and naming some of each - Learning that fruits and vegetables grow in one of three places: on trees or vines, above the ground, below the ground - Tasting and comparing fruits and vegetables, describing their: appearance, feel and smell and - selecting fruits and vegetables for a smoothie - Making a fruit and vegetable smoothie, preparing the ingredients, using a knife to cut safely and learning to use a blender	- Naming fruits and vegetables and explaining why they are a fruit or a vegetable (seeds, leaves, roots etc.) - Explaining a range of places that fruits and vegetables grow. - Describing basic characteristics of fruits and vegetables (colour, seeds, taste – sweet etc.) - Preparing fruits and vegetables to make a smoothie (Knowing importance of washing beforehand)	- Naming fruits and vegetables and explaining why they are a fruit or vegetable. Describing fruits and vegetables by their properties - Explaining that vegetables primarily grow above or below ground whilst fruits primarily grow in trees, bushes or vines. Explaining that we eat different parts of plants and able to give examples - Describing basic characteristics of fruits and vegetables in detail, considering: how the ingredients work together, what other combinations would be better and what ingredient could be removed - Preparing carefully selected fruits and vegetables to make a smoothie, giving careful consideration to flavour combinations
Structures	<u>Designing the structure</u> - Describing the purpose of a given structure and including individual preferences and requirements within a design <u>Assembling the structure</u> - Making a stable structure - following instructions to cut and	<u>Designing the structure</u> - Identifying and articulating some features and a design that would appeal to the character within a given story <u>Assembling the structure</u>	<u>Designing the structure</u> - Identifying a greater range of features that would appeal to the character within a given story, which may go beyond basic aesthetic considerations, such as colour, and focus on functional aspects, such as doors and

	assemble the supporting structure of the windmill. Knowing that the shape of materials can be changed to improve the strength and stiffness of structures and that cylinders are a strong type of structure - Cutting and assembling the turbine correctly, understanding that windmill turbines use wind to turn and make the machines inside work, knowing that axles are used in structures and mechanisms to make parts turn in a circle and testing that the turbine turns in the structure and altering the parts if it doesn't <u>Testing and Evaluating</u> - Evaluating the windmill according to the design criteria, testing its strength and stability and reinforcing it if necessary. Testing that the turbine turns in the structure and altering the parts if it doesn't and testing that it turns freely in when blown on	- Making stable structures from card, tape and glue which will eventually support the turbine. - Articulating historical and contemporary uses of windmills and cutting and assembling components with accuracy. <u>Testing and Evaluating</u> - Making functioning turbines and axles which are assembled into the main supporting structure. Identifying what is good about the structure and what could be done better.	windows. Extending the structure to include a roof. <u>Assembling the structure</u> - Cutting and sticking with accuracy to create a strong and stable structure. Successfully securing a separate structure for the roof of the windmill. Explaining the function of windmills in different times and situations. Creating more sophisticated products through greater attention to accuracy and precision during the making process. <u>Testing and Evaluating</u> - Creating more sophisticated products through greater attention to accuracy and precision during the making process. Evaluating the outcome by referencing the 'Success and Design Criteria'

Year 2 Design and Technology - Learning Objectives and Knowledge Overview

Design Technology - Learning Objectives	Autumn	Spring	Summer
Design • design purposeful, functional, appealing products for themselves and other users based on design criteria	Revisit	Revisit	Revisit
• generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	Revisit	Revisit	Revisit
Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]	Revisit	Revisit	Revisit
• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	Revisit	Revisit	Revisit
Evaluate • explore and evaluate a range of existing products	Revisit	Revisit	Revisit
• evaluate their ideas and products against design criteria	Revisit	Revisit	Revisit
Technical Knowledge • build structures, exploring how they can be made stronger, stiffer and more stable	Introduce	Revisit	Revisit
• explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	Introduce	Revisit	Revisit
Cooking & Nutrition • use the basic principles of a healthy and varied diet to prepare dishes	Revisit		
• understand where food comes from.	Introduce		Revisit

Design and Technology - Curriculum	Autumn	Spring	Summer
	Moving Pictures Part 1 • Gingerbread man sliders – what is a slider and how to make one and incorporate into a picture • Jack and the Beanstalk levers – what is a lever and how to make one and incorporate into a picture **Christmas Creations** • Cards with moving parts • Calendars (drawing the four seasons **Food tech** •Christmas cooking	**Moving Pictures Part 2** •How to make a desert animal picture with Pivots • How to add wheels and an axle. **Food Tech** •Designing a healthy wrap •Making and creating a healthy wrap. **Easter** • Easter cards with moving parts	**Sewing a pouch**. • Use a running stitch – practice on different fabrics. • Join 2 pieces of felt with a running stitch. • Design and cut out a template. • Join the front and back of a purse with running stitch. • Decorate the purse with various pieces of felt. • Evaluate and critique their design.

Year 2 Design and Technology - Progression and Assessment

	Working Towards	Age Related Expectation	Greater Depth
Food **Healthy wraps**	- Learning what makes a balanced diet and that there are five food groups (fruit and vegetables, starchy carbohydrates, proteins, dairy and oil and spreads). Knowing where to find the nutritional information on a drinks container - Taste testing food combinations. Experiencing food through touch and smell and knowing that the ideal ingredient combinations for a dish will contain foods from more than one food group - Remembering which food combinations work well together and designing three possible wraps based on these, then selecting one to make. Learning how to slice food safely using the bridge or claw grip - Making a healthy wrap, preparing the food safely and reviewing the final design	- Naming the four main food groups and identifying foods that belong to each group - Identifying the correct food group of a given food and describing its taste, texture and smell - The ability to think of four different wrap ideas, giving consideration to flavour combinations - Constructing a wrap that meets the design brief and plan	- Secure knowledge of the four main food groups and the foods that belong in each. Identifying the dangers of hidden sugars in drinks - Carefully considering why flavour combinations do or don't work and using varied vocabulary to describe smells, textures or tastes - Carefully considering combinations that include complementary flavours and textures and justifying this - Constructing a wrap that meets the design brief and plan and that has been adapted where necessary, eg: the size of the ingredients in the wrap

Textiles **Making a pouch**	- Threading a needle and sewing a running stitch - Cutting fabric using a template - Joining fabrics using a running stitch, sewing with neat, even stitches and tying a knot at either end of the thread. Designing decorations for the pouch - Joining items using fabric glue or stitching, decorating the pouch and evaluating the final product	- Sewing a running stitch with regular sized stitches and understanding that both ends of the thread must be knotted - Preparing and cutting the fabric, pinning the fabric and designing a pouch - Sewing a running stitch to join the two pieces of fabric together - Decorating the pouch using the materials provided	- Threading a needle, sewing a straight running stitch with evenly sized stitches and understanding that both ends of the thread must be knotted - Preparing and neatly cutting the fabric, pinning the fabric accurately and designing a pouch - Sewing a running stitch using a uniform and close running stitch to join the two pieces of fabric together - Decorating the pouch using the materials provided to accurately replicate the design plan
Structures **Baby bear's chair**	- Comparing the stability of different shapes, identifying when a structure is more or less stable than another. Learning that shapes and structures with wide, flat bases or legs are most stable. Identify natural and man-made structures - Exploring strength in different structures, learning that the shape of the structure affects its strength. Building a strong and stiff structure by folding paper and learning that there are different ways paper can be folded to improve it. Testing the strength of a structure	- Identifying man-made/natural structures. Contributing to discussions. Identifying stable and unstable structural shapes. Identifying features that make a chair stable - Explaining the definition of strength. Identifying the strongest and weakest shaped and part of a structure. Making and testing a structure - Working independently to use the materials as demonstrated to begin to make a stable structure. Explaining how their ideas would be suitable for the given brief - Producing a model that satisfies the given brief, using the	- Ability to explore a wider range of structural shapes and interpret the results of the tip-test. Accurately identifying the information above, making more detailed observations/records and drawing accurate conclusions independently - Accurately distinguishing between strength and stability. Making accurate, functional structures and testing them independently. Articulating why cylindrical structures are stronger than those with corners - Working independently to produce a more demanding design and working with a wider

	- Making a structure according to design criteria. Knowing that chairs are structures and that they need to be strong, stiff and stable. Creating joints and structures from paper/card and tape - Producing a finished strong, stuff and stable structure and evaluating it against the design criteria	appropriate materials and construction techniques and explaining how they made it strong, stiff and stable	range of materials and construction methods. Using more complicated joining techniques and producing neat results. Articulating why their designs will be suitable for the given brief and identifying how it could be made even better - Producing a model that satisfies the given brief, made using a range of materials and construction techniques to produce a more demanding design. Explaining how they made it strong, stiff and stable and how to improve it

Year 3 Design and Technology - Learning Objectives and Knowledge Overview

Design Technology - Learning Objectives	Autumn	Spring	Summer
Design • 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	Introduce	Revisit	
• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Introduce	Revisit	
Make • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately	Introduce	Revisit	
• 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	Introduce	Revisit	Revisit
Evaluate • 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	Introduce	Revisit	Revisit
• understand how key events and individuals in design and technology have helped shape the world			
Technical Knowledge	Introduce	Revisit	

• 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]		Introduce	
• 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.			
Cooking & Nutrition • understand and apply the principles of a healthy and varied diet			Introduce
•prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques			Introduce
• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.			Introduce
Design and Technology - Curriculum	**Autumn**	**Spring**	**Summer**
	Constructing a castle •identify different features of castles by looking at a variety •design their own castle •label the features of their castle •add two design points to the design specification to appeal to the person/purpose of their castle	**Exploring Pneumatic systems** •understanding how pneumatic systems work **and that** mechanisms are a system of parts that work together to create motion •pneumatic systems can be used as part of a mechanism, used in a range of everyday objects and force air over a distance to create movement	**Eating Seasonally** •To know that climate affects food growth and that fruits and vegetables can be grown in the UK •know that each country has its own climate and understand that these climates enable different fruits and vegetables to grow •consider hygiene when preparing food

	•draw the design of my castle using 2D shapes, labelling: -the 3D shapes that will create the features -materials they need colours they will use •know that a net is what a 3D shape would look like if it were opened out flat •use a range of box modelling resources •construct a range of 3D geometric shapes using a net by: -Cutting along the bold lines -Folding along the dotted lines -Keeping the tabs the correct size -Making crisp folded edges -Constructing the net using glue to make a geometric shape	•design and develop a toy which uses a pneumatic system •generate suitable ideas using thumbnail sketches and exploded diagrams •use recycled household objects to make it •different types of drawings are used in design to explain ideas clearly •build secure housing for a pneumatic system •use syringes and balloons to create different types of pneumatic systems •use these components to make a functional and appealing pneumatic toy	•use cooking equipment safely •know that importing food impacts the environment and is one of the reasons why we should eat seasonal foods grown in the UK and that imported food will have travelled from far away and has an impact on the environment •know that vegetables and fruit grow in certain seasons and that in the UK we often import food from other countries when it is not in season •create a recipe that is healthy and nutritious using seasonal vegetables design a filo tart using seasonal vegetables. safely follow a recipe when cooking •know how to prepare a kitchen to cook in •know the basic rules of food contamination •use, store and clean a knife safely

Year 3 Design and Technology - Progression and Assessment

	Working Towards	Age Related Expectation	Greater Depth
Food **Eating seasonally**	(Working with Support) - Learning that climate affects food growth and that not all fruits and vegetables can be grown in the UK. Learning to consider hygiene when preparing food and to use cooking equipment safely - Understanding that we import food from other countries when foods are not in season, and that imported food will have travelled from far away and has an impact on the environment. - Creating a healthy and nutritious recipe using seasonal vegetables. Knowing what foods are currently in season and that each fruit and vegetable gives us nutritional benefits - Safely following a recipe, knowing how to prepare themselves and a kitchen to cook in, understanding the basic rules of food contamination and using, storing and cleaning a knife safely	- Explaining that fruits and vegetables grow in different countries based on their climates. - Understanding that 'seasonal' fruits and vegetables are those that grow in a given season and taste best then and that eating seasonal fruit and vegetables has a positive effect on the environment. - Designing a recipe using seasonal ingredients - Understanding the basic rules of hygiene and safety when working with food and following the instructions within a recipe	- Explaining the features of the various climates of the world and naming some countries that have this climate and the fruits and vegetables grown there. - Understanding that a country's climate will affect the fruits and vegetables that grow in its seasons and explaining why eating seasonal fruit and vegetables has a positive effect on local farmers as well as the environment - Designing a recipe using seasonal ingredients considering the taste, texture, smell and appearance of the dish. - A thorough understanding of a how to work safely and hygienically when cooking and working independently to follow the steps within a recipe to create successful end result.

Mechanical systems **Pneumatic toys**	<u>Exploring pneumatics</u> - Learning how pneumatic systems work. Understanding that mechanisms are a system of parts that work together to create motion, that pneumatic systems can be used as part of a mechanism and they force air over a distance to create movement and are used in a range of everyday objects <u>Designing a pneumatic toy</u> - Designing a toy from recycled materials which uses one of three pneumatic systems. Developing a design criteria from a design brief, generating suitable ideas using thumbnail sketches and exploded diagrams <u>Making a pneumatic toy</u> - Creating a pneumatic system to achieve a desired motion and secure housing for the system. Knowing that syringes and balloons can be used to create different types of pneumatic systems <u>Decorating/ assembling & Evaluating</u> - Selecting materials due to their functional and aesthetic characteristics, manipulating them to create different effects	<u>Exploring pneumatics</u> - Drawing accurate diagrams with correct labels, arrows and explanations and correctly identifying definitions for key terms <u>Designing a pneumatic toy</u> - Identifying five appropriate design criteria, communicating two ideas using thumbnail sketches and communicating and developing one idea using exploded diagrams <u>Making a pneumatic toy</u> - Selecting appropriate equipment and materials to build a working pneumatic system and assembling it within the housing to create the desired motion <u>Decorating/ assembling & Evaluating</u> - Creating a finished pneumatic toy that fulfils the design brief	<u>Exploring pneumatics</u> - Identifying and explaining how objects and materials can move using trapped air pressure (pneumatics) and incorporating this into a detailed drawing <u>Designing a pneumatic toy</u> - Producing accurate and detailed designs with all parts and materials labelled <u>Making a pneumatic toy</u> - Creating a more complex system of pneumatics and linkages, which is functional, neat and stable; using materials creatively <u>Decorating/ assembling & Evaluating</u> - Creating a sophisticated pneumatic systems with linkages and decorative housing, showing creative use of materials and attention to detail

	by cutting, creasing, folding, weaving, etc and testing and finalising ideas against design criteria		
Structures **Constructing a castle**	(Working with support) <u>Features of a castle</u> - Identifying the features of a castle <u>Designing a castle</u> - Designing a castle, drawing the design of the castle using 2D shapes, labelling: the 3D shapes that will create the features. describing the materials required and colours to be used <u>Nets and Structures</u> - Knowing that a net is what a 3D shape would look like if it were opened out flat and constructing 3D nets <u>Building and evaluating a Castle</u> - Constructing a castle to meet the requirements of the brief; making 3D shapes using nets, stacking shapes and recyclable materials to make the structures of the castle, creating a base to secure the structures to, adding facades and other decorative features. Evaluating own work.	<u>Features of a castle</u> - Drawing a simple castle that includes the most common features and labelling the drawing <u>Designing a castle</u> - Designing a castle with key features which appeals to a given person/purpose <u>Nets and Structures</u> - Constructing a range of 3D geometric shapes using a net by: Cutting along the bold lines Folding along the dotted lines Keeping the tabs the correct size Making crisp folded edges Gluing securely to assemble the geometric shape <u>Building and evaluating a Castle</u> - Building a complex structure from simple geometric shapes. Evaluating own work by answering simple questions	<u>Features of a castle</u> - Drawing a more comprehensive castle with all of the features of the castle included. Labelling the drawing with key words and definitions of each feature <u>Designing a castle</u> - Identifying specific details of the design, eg: materials, colours. Designing a castle in detail, incorporating basic features as well as other useful features specific to the person or purpose they're designing for <u>Nets and Structures</u> - Working creatively and accurately to make the unique features found in their initial design through more complex structures. Constructing nets with accuracy and designing their own nets <u>Building and evaluating a Castle</u> - Building a complex structure from simple geometric shapes with accuracy and creativity, justifying design decisions and identifying ways to improve own work. Evaluating own work and the work of others in relation to the original design

Year 4 Design and Technology - Learning Objectives and Knowledge Overview

Design Technology - Learning Objectives	Autumn	Spring	Summer
Design • 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	Introduce		Revisit
• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Introduce		Revisit
Make • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately	Introduce		Revisit
• 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	Introduce		Revisit
Evaluate • 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	Introduce		Revisit
• understand how key events and individuals in design and technology have helped shape the world			

Technical Knowledge • 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]			Introduce
• apply their understanding of computing to program, monitor and control their products.			
Cooking & Nutrition • understand and apply the principles of a healthy and varied diet		Introduce	
•prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques		Introduce	
• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.		Introduce	
Design and Technology - Curriculum	**Autumn**	**Spring**	**Summer**
	<u>Fastenings - Textiles Skills</u> • Designing a personalised book sleeve, articulating decisions made. • Making and testing a paper template with accuracy and in keeping with the design criteria • Measuring, marking and	**Cooking and Nutrition – Making Chaat** •Using knowledge of spices and vegetables, discuss creating own version of chaat recipe. •What are spices? (Bark root seed or fruit of a plant or tree) •How are they different from	**Torches – Electrical Systems <u>Skills</u>** . Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas

	cutting fabric using a paper template • Selecting a stitch style to join fabric, working neatly sewing small neat stitches • Incorporating fastening to a design • Testing and evaluating the end product against the original design criteria • Deciding how many of the criteria should be met for the product to be considered successful • Suggesting modifications for improvement • Articulating the advantages and disadvantages of different fastening types **<u>Knowledge</u>** • To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro • To know that different fastening types are useful for different purposes • To know that creating a mock up (prototype) of their design is	herbs? What foods might you find them in? •Look at spices - draw and research information on each spice. Create a spice mat. •Make a poster to inform people of good hygiene •Look at a chaat recipe on line. • Cooking safely, following basic hygiene rules • Evaluating a recipe, considering: taste, smell, texture and appearance • Evaluating and comparing a range of products • Suggesting modifications **<u>Knowledge</u>** • To know that the amount of an ingredient in a recipe is known as the 'quantity' • To know that it is important to use sharp knives appropriately whilst chopping	• Making a torch with a working electrical circuit and switch • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria • Evaluating electrical products • Testing and evaluating the success of a final product **<u>Knowledge</u>** • To understand that electrical conductors are materials which electricity can pass through • To understand that electrical insulators are materials which electricity cannot pass through

	useful for checking ideas and proportions	• To know the difference between herbs and spices	• To know that a battery contains stored electricity that can be used to power products • To know that an electrical circuit must be complete for electricity to flow • To know that a switch can be used to complete and break an electrical circuit

Year 4 Design and Technology - Progression and Assessment

	Working Towards	Age Related Expectation	Greater Depth
Textiles **Book sleeve**	<u>Evaluating Fastenings</u> - Identifying and evaluating different types of fastenings, articulating the benefits and disadvantages of each fastening type <u>Design</u> - Designing a product to meet a design criteria which includes a fastening <u>Paper mock up</u> - Making and testing a paper template <u>Make</u>	<u>Evaluating Fastenings</u> - Identifying the features, benefits and disadvantages of a range of fastening types <u>Design</u> - Writing design criteria and designing a sleeve that matches this criteria, including a fastening of some kind <u>Paper mock up</u> - Making a template for the book sleeve <u>Make</u>	<u>Evaluating Fastenings</u> - Identifying the features, benefits and disadvantages of a range of fastening types and to justify why one type may be more suitable than another type for a specific purpose <u>Design</u> - Using a design criteria to design a sleeve that meets all of the design requirements, explaining their choices <u>Paper mock up</u>

	- To assemble the book jacket, joining the fabric by sewing and adhering to the design criteria	- Assembling the case, sewing with a stitch of their choosing	- Drawing a template with accurate proportions to fit the reading book, which also matches the design <u>Make</u> - Assembling the case, sewing with a stitch of their choosing (blanket/running), using small, neat stitches and reinforcing these where necessary
Digital world: Electronic charm	<u>Understand the digital world</u> - Understanding that there have been advances in technology. Explaining the difference between analogue and digital. Understanding some of the features of a Micro:bit.	<u>Understand the digital world</u> - Stating a product that has developed over time. Giving a brief explanation about the digital revolution and/or, through remembering key examples. Suggesting a feature from the Micro:bit for the eCharm.	<u>Understand the digital world</u> - Stating and describing how a product(s) has developed over time. Giving an explanation with extended thoughts and opinions about the digital revolution. Suggesting key features of the Micro:bit for the eCharm with justification.
	<u>Programming</u> Adapting a given program that initiates a flashing LED panel design on the Micro:bit when a button is pressed. Identifying when there are errors in their program. <u>Make</u> - Suggesting key features for a pouch. Using a template with	<u>Programming</u> - Writing a program that initiates a flashing LED panel and/or custom-preset LED panel design on the Micro:bit when a button is pressed. Suggesting where the errors are if testing is unsuccessful, by comparing the correct code versus their own. Explaining the basic functionality of their finished program. <u>Make</u>	<u>Programming</u> - Testing their program using debugging skills to fix any programming errors independently. Including the extension code and amending their design criteria accordingly. Explaining the functionality of their finished program with greater understanding. <u>Make</u>

	adult support when cutting and assembling the pouch. <u>Design & Evaluate</u> - Giving an example of a 'point of sale' display. Following basic design requirements using computer-aided design by drawing at least one shape with a textbox and bright choice of colours, with adult or peer support. Expressing their opinion of their finished design. -	- Suggesting and identifying key features for a pouch. Developing design ideas with some thought to the overall theme and chosen user. Using a template when cutting and assembling the pouch with some support. <u>Design &Evaluate</u> - Describing what is meant by 'point of sale display', and giving an example. Following basic design requirements using computer-aided design by drawing at least one shape with a textbox and bright choice of colours, following the teacher demonstration. Evaluating their own design, including a positive point and something they would like to include.	- Suggesting, identifying and expressing the need for key features for a pouch, developing design ideas that are tied to the theme and chosen user with justification. Using a template accurately when cutting and assembling the pouch independently. <u>Design & Evaluate</u> - Describing and explaining what a point of sale display can include, with examples (including from their own experience). Following the design requirements, including their own additions with justification as well as any extension work. Evaluating their own design, including positive and points to improve their design with explanation.
Electrical Systems: Torch	- Identifying electrical products, learning what electrical conductors and insulators are and that a battery contains stored electricity <u>Evaluate</u> - Identifying the features of a torch and understanding how it	- Identifying electrical products and explaining why they are useful and helping to make a working switch <u>Evaluate</u>	- Identifying the features of electrical products, making a working switch and suggesting other ways this could be made, including mentioning conductors <u>Evaluate</u>

	works and identifying what is important in torch design <u>Design</u> - Designing a torch, giving consideration for who the product is for <u>Make</u> - Making a torch with a working circuit with a switch, using appropriate equipment to cut and attach materials and assembling a torch according to the design and success criteria. Testing and evaluating the torch	- Identifying the features of a torch, how it works and describing what makes a torch successful <u>Design</u> - Creating suitable designs which fit both the success criteria and their personal design criteria <u>Make</u> - Creating a functioning torch with a switch according to their design criteria	- Explaining what features are important to all torches and which are tailored to the target audience as well as generating creative suggestions for how the components could be made <u>Design</u> - Applying the outcome of the evaluation task to improve their design and adding special features specifically designed for their 'client' <u>Make</u> - Creating a torch with special features to suit their 'client' and discussing how these components could be used in other products

Year 5 Design and Technology - Learning Objectives and Knowledge Overview

Design Technology - Learning Objectives	Autumn	Spring	Summer
Design • 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	Introduce	Revisit	Revisit
• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Introduce	Revisit	Revisit
Make • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately		Introduce	Revisit
• 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		Introduce	Revisit
Evaluate • 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		Introduce	Revisit
• understand how key events and individuals in design and technology have helped shape the world		Introduce	Revisit
Technical Knowledge		Introduce	

• 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]		Introduce	
• 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.			
Cooking & Nutrition • understand and apply the principles of a healthy and varied diet	Introduce		
•prepare and cook a variety of predominantly savory dishes using a range of cooking techniques	Introduce		
• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	Introduce		
Design and Technology - Curriculum	**Autumn**	**Spring**	**Summer**
	Food and Nutrition – The Mayans •Know where food is grown •To gain an understanding of the food eaten by the Maya civilization. •To know why this food was available to them. •To identify food from each food group.	**Bridges** •To explore how to create a strong beam •To build a spaghetti truss bridge •To build a wooden bridge structure •To improve and reinforce a bridge structure	**Mechanisms -** **Pop up Books** •To use different moving parts - sliders and levers •Design and make a pop-up story book EYFS pupils - each page should use a mechanism to make it interactive. •Put book together. •Add colour, detail and words to pop up book

	•To look at the nutrition information of guacamole and salsa. •To taste and review guacamole and salsa. •To make a savoury dip (salsa or guacamole). •To research and design a persuasive advert and packaging for their dip. •Other tasting ideas linked to Maya civilization: chocolate, tortillas. •Look closely at the process of Cocoa beans to chocolate.		•Add animals to pop up/sliders/levers •Add layers to hide mechanisms

Year 5 Design and Technology - Progression and Assessment

	Working Towards	Age Related Expectation	Greater Depth
Structures: Bridges	- Identifying arch and beam bridges and understanding 'compression and tension'. Making a range of different shaped beam bridges, identifying stronger and weaker structures and finding different ways to reinforce structures - Building a spaghetti truss bridge Identifying and building suspension and truss bridges, using triangles to create truss bridges and testing them, understanding how triangles can be used to reinforce bridges <u>Make</u> - Building a wooden bridge structure, measuring and marking the wood accurately, selecting appropriate tools and equipment, using saws safely and using card corners to reinforce the structure <u>Evaluating</u>	- Articulating the definition of 'tension and compression' and identifying stronger and weaker shapes and points where structures typically failed - Identifying suspension and truss bridges and using triangles to create a simple truss bridge that spans a given distance and supports a load. <u>Make</u> - Independently measuring and marking out wood and using correct techniques to cut it safely <u>Evaluating</u> - Evaluating the success of the bridge, making improvements and reinforcements as necessary	- Articulating the definition of 'tension and compression' and identifying where it is utilised in different structures. Suggesting a variety of ways to reinforce structures at the points at which they failed - Articulating the difference between beam, arch, truss and suspension bridges and making an accurate and well constructed truss bridge, explaining where some bridges are stronger or weaker than others. <u>Make</u> Independently creating accurate, neat and secure joints by using correct techniques to cut the wood safely and using card corners where they determine they need to reinforce their structure <u>Evaluating</u>

	- Improving and reinforcing a bridge structure, identifying points of weakness and reinforce them as necessary and adding road markings		Independently building the bridge design, adapting and improving the structure as necessary by identifying points of weakness as well as adding road markings to the bridge surface for a high quality finish
Mechanical systems: Making a Pop-up Book	<u>Design</u> - Designing a pop up book which includes a mixture of structures and mechanisms within in. Understanding that input is the motion used to start a mechanism and output is the motion that happens as a result <u>Make</u> - Following a design brief to make a pop up book, making mechanisms and/or structures by using sliders, pivots and folds to produce movement - Using layers and spacers to cover the working of mechanisms - Completing the surface decoration of the pop-up book, adding pictures, captions and ensuring that the making is neat, accurate and secure	<u>Design</u> - Producing a suitable plan for each page, naming each type of mechanism, input and output and understanding that structures use the movement of the pages to work and mechanisms control movement <u>Make</u> - Producing the structure of the book and beginning to draw and assemble the components necessary for the first structures/mechanisms - Assembling the components for all the required structures/mechanisms and hiding the relevant parts of the mechanisms with more layers using spacers where needed - Using a range of mechanisms and structures to illustrate the story and making it interactive. Using	<u>Design</u> - Producing a suitable plan for each page, naming each type of mechanism, input and output accurately, including more complex linkage systems and understanding that structures use the movement of the pages to work and mechanisms control movement <u>Make</u> - Using more demanding mechanisms/structures. Producing a product of exceptionally high quality – neatly and accurately cut and assembled - Assembling the components for all the necessary structures/mechanisms and hiding the relevant parts of the mechanisms with more layers using spacers where needed.

		layers to hide mechanical elements and illustrating the story through the use of appropriate materials and captions	Producing more demanding mechanisms/structures and work is of exceptionally high quality (neatly and accurately cut and assembled) - Including a wider range of more sophisticated mechanisms and structures. High quality making and sophistication of the surface decoration
Food – What could be healthier	- To know where food is grown – looking at the Mayan civilisation <u>Evaluate</u> - Knowing that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. <u>Make & Design</u> - Following a recipe to make a savoury, using the relevant equipment safely, working hygienically and designing appealing packaging to reflect the recipe	- To understand why certain foods are grown in different places <u>Evaluate</u> - Recognising nutritional differences between two similar recipes and giving some justification as to why this is. <u>Make & Design</u> - Following a recipe to produce a healthy savoury dip, chopping an onion as shown and designing a persuasive advert.	- Considering, in depth the ethical issues around growing food <u>Evaluate</u> - Explaining why two similar recipes have different nutritional values and giving reasons as to why this might be and giving an opinion as to why the health benefits of one outweigh the other. <u>Make and Design</u> - Chopping an onion as shown, helping others to accurately follow the recipe method and designing a persuasive advert that highlights the key features of the sauce and justifying their choices. -

Year 6 Design and Technology - Learning Objectives and Knowledge Overview

Design Technology - Learning Objectives	Autumn	Spring	Summer
Design • 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	Introduce		Revisit
• generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Introduce		Revisit
Make • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately			Introduce
• 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	Introduce		
Evaluate • 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	Introduce		Revisit
• understand how key events and individuals in design and technology have helped shape the world	Introduce		Revisit

Technical Knowledge • apply their understanding of how to strengthen, stiffen and reinforce more complex structures			Introduce
• 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.			
Cooking & Nutrition • understand and apply the principles of a healthy and varied diet	Introduce		
•prepare and cook a variety of predominantly savory dishes using a range of cooking techniques	Introduce		
• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	Introduce		
Design and Technology - Curriculum	**Autumn**	**Spring**	**Summer**
	Cakes •Investigating cakes •Investigate the effect that rationing had on cooking •Test different possibilities of combination of ingredients •Wartime recipes and rationing •Create a dish using limited ingredients		**Playground Equipment Design** • Analyse existing playground equipment • Plan a new set of playground equipment based on a design brief • Create a scale model of playground equipment,

	•Developing ideas for wartime cakes •Gathering ingredients and making cakes •Evaluating cakes		considering how to strengthen etc • Anaylse final design against design brief

Year 6 Design and Technology - Progression and Assessment

	Working Towards	Age Related Expectation	Greater Depth
Monitoring Devices Digital world	<u>Design</u> Naming some common monitoring devices and understanding that they have developed over time. Completing given design criteria by using given data. <u>Make</u> Writing a program that monitors the ambient temperature with the help of a visual aid and support of an adult. The program should give the carer an alert when the temperature moves out of a specified range. Identifying when there are errors in the code and suggesting ways that they could be fixed. <u>Evaluate</u> Understanding that plastic is affecting the environment and naming some different	<u>Design</u> Describing what is meant by monitoring devices and providing an example. Explaining briefly the development of thermometers from thermoscopes to digital thermometers. Researching a chosen animal's key information to develop a list of design criteria. <u>Make</u> Writing a program that monitors the ambient temperature and alerts someone with a visual and/or audible alert when the temperature drops below or rises above a specified range. Suggesting where there are errors (bugs) in the code and ways to fix(debug) them by comparing their program to a finished example or by retracing steps. Explaining in basic terms, the functions of the program and how they will be useful for an animal carer.	<u>Design</u> Describing what is meant by monitoring devices and providing a few examples. Explaining in detail the development of thermometers from thermoscopes to digital thermometers and the connection they have to our animal monitor project. Researching a chosen animal's key information to develop a list of design criteria. <u>Make</u> Writing a program that monitors the ambient temperature and alerts someone with both a visual and an audible alert when the temperature drops below or rises above a specified range. Can identify where there are errors (bugs) in the code and fix (debug) them. Explaining in detail the functions of the program including comments and how they will be useful for an animal carer. Including extension functions for 'On button

	ways we can reduce plastic consumption. Building a variety of brick models to invent Micro: bit case, housing and stand ideas, that do not obstruct the LED display or buttons. Discussing their design and expressing their opinions about it. Understanding the difference between virtual modelling and physical modelling. Placing and manoeuvring 3D objects to place individual objects on Tinkercad back together again.	<u>Evaluate</u> Understanding that plastic is affecting the environment and naming some different ways we can reduce plastic consumption. Building a variety of brick models to invent Micro: bit case, housing and stand ideas, that do not obstruct the LED display or buttons. Discussing their design and expressing their opinions about it. Explaining key pros and cons of virtual modelling vs physical modelling. Recalling and describing the name and use of key tools used in Tinkercad (CAD) software. Fulfilling the design requirements of the 3D virtual model.	[A] pressed' and justifying how it enhances the existing program. <u>Evaluate</u> Understanding that plastic is affecting the environment and naming some different ways we can reduce plastic consumption. Building a variety of brick models to invent Micro: bit case, housing and stand ideas, that do not obstruct the LED display or buttons. Discussing their design and expressing their opinions about it. Explaining and justifying the need for a virtual model and how it could be used in industry. Recalling and describing the name and use of additional tools beyond what was demonstrated in Tinkercad (CAD) software. Replicating their building brick idea and adding extra features directly in Tinkercad by tinkering. Fulfilling the design requirements of the 3D virtual model, and justify their choices.

Stuffed Toy Textiles	<u>Design</u> - Designing a stuffed toy, making a proportional paper template <u>Make</u> - Using a blanket stitch to join two pieces of fabric, cutting neatly and accurately and threading a needle - Creating and adding decorations to fabric, using applique to attach pieces of fabric decoration and stitches to decorate fabric <u>Evaluate</u> - Using a blanket stitch to assemble the components of the toy, stuffing the toy and evaluating the end product	<u>Design</u> - Designing a stuffed toy considering the main component shapes required and creating an appropriate template <u>Make</u> - Joining two pieces of fabric using blanket stitch and neatly cutting out their fabric - Using appliqué or decorative stitching to decorate the front of the stuffed toy <u>Evaluate</u> - Using blanket stitch to assemble the stuffed toy, repairing when needed and identifying what worked well as well as areas for improvement	<u>Design</u> - Creating a detailed and complex design of a stuffed toy considering all of the component shapes required to make the overall toy and creating an appropriately sized template <u>Make</u> - Confidently joining two pieces of fabric using blanket stitch and practising other types of stitching (running and cross stitch) - Using neat, small stitches to attach decorative fabric as well as adding decorative stitching according to the design <u>Evaluate</u> - Creating a stuffed toy with different components, assembling it using blanket stitch which is neat and consistent, repairing or reinforcing areas where necessary