Christopher Pickering Primary School

Design Technology

The intent of the Design Technology curriculum
To ensure that all pupils: • **use creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values.** • **acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art.** • **learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens.** • **evaluate past and present design and technology in order to develop a critical understanding of its impact on daily life and the wider world.** • **acquire the skills and knowledge to make a contribution to the creativity, culture, wealth and well-being of the nation as design technologists.**

What are the key features of 'knowledge-rich' assessment for Design Technology?
❑ At key stage 1 and 2, the sticky knowledge takes full account of the national curriculum's main characteristics of: ❑ Designing ❑ Making ❑ Evaluating ❑ Using technical knowledge ❑ Food technology
❑ There are relatively few assessment statements as these knowledge statements should be what pupils retain for ever. In other words, this knowledge is within their long-term memory and will be retained.

Investigate → **Focused Practical Task** → **Design** → **Make** → **Evaluate**

Design Technology: Key Stage 1							
		Year 1			Year 2		
Process	**Main Objective**	**Construction – Freestanding Structures- playground equipment**	**Construction – Mechanisms –moving picture book**	**Food – Healthy sandwich**	**Food – stuffed vegetable rocket**	**Construction – Mechanisms - London's calling**	**Textiles – Titanic Puppets**
Investigate	*Research existing products and key individuals who have contributed towards the development of the product being studied.* Understand where food comes from.	Investigate the purpose of playground equipment and how it is structured	Investigate how levers and sliders are used in the real world (drawers, scissors etc.)	Investigate a range of sandwiches and find out about the history of the sandwich Investigate how a sandwich can be healthy Investigate where various sandwich fillings come from Consider which fillings they may use and why based on taste testing (like, don't like, appearance, smell and texture) Investigate key individuals – Anna Marie Russell – duchess of Bedford. Requires a selection of sweet and savoury snacks to be brought to her room between luncheon and dinner to prevent her hunger	Investigate a range of vegetables and find out about how they are grown Investigate the nutritional benefits of vegetables Consider which fillings they may use and why based on taste testing (like, don't like, appearance, smell and texture)	Investigate what a vehicle is and how they are made from different components to work Investigate what wheels, axles and chassis are and their purpose Investigate key individuals - Karl Benz, Elton Musk and Eduardo San Juan and the impact they had on modern-life	Investigate a range of different puppets and how they have been made. Investigate the purpose of puppets and their uses Investigate the different fabrics used in the puppet. Investigate key individual – Jim Henson and the types of puppets he makes
Designing	Design - purposeful, functional, appealing products for themselves and other users based on design criteria	Generate ideas informed by Focussed Practical Task Design and label diagrams stating what materials they will need, who will use it and how they will build it **(2 designs)** Choose a final design and explain why	Generate ideas through talking and drawing Design a travel/transport scene, thinking about setting and characters **(1 design)** Label design identifying moving parts and materials used	Generate ideas informed by Focussed Practical Task Design and label diagrams stating which fillings they have chosen and why based on the investigation and for a specific purpose (a beach picnic) Thinking about type of bread, variation of fillings and ingredients list **(2 designs)** Choose a final design and explain why	Generate ideas informed by Focussed Practical Task Design and label diagrams of ideas ensuring clear labelling of ingredients used **(2 designs)** Choose a final design and explain why.	Generate ideas informed by Focussed Practical Task Design and label diagrams of ideas ensuring clear labelling of wheels, axles and chassis **(2 designs)** Choose a final design and explain why Ask children to assemble some examples of wheel, axle and axle holder combinations	Generate ideas informed by Focussed Practical Task Draw and label diagrams of ideas – stating which fabrics have been used, which stitches have been used and any other resources used **(2 designs)** Choose a final design and explain why
Making	Design - generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, ICT use the basic principles of a healthy and varied diet to prepare dishes	Discuss the sequence of making the product Using given resources and collected resources children to create their design With adult supervision children to use a variety of simple tools	Discuss the sequence of making the product Using given resources (scissors, split pins, card and drawing implements) children to create their design	Discuss the sequence of making the product Using given resources children to create their design With adult supervision children to use a variety of simple utensils		Discuss the sequence of making the product Make emergency vehicles based on chosen design choosing appropriate resources With adult supervision children to use a variety of simple tools	Discuss the sequence of making the product Choosing appropriate resources, children to make their designed product. Attach a range of finishes using glue

Evaluating		Simple evaluation based on traffic light system of the success criteria Did they like it? Did it work? Did they follow their design?	Simple evaluation based on traffic light system of the success criteria Did they like it? Did it work? Did they follow their design?	Simple evaluation based on traffic light system of the success criteria Did they like it? Did it work? Did they follow their design? Taste evaluation.	Evaluation based on what went well, what didn't and suggest one change if they were to do the project again	Evaluation based on what went well, what didn't and suggest one change if they were to do the project again	Evaluation based on what went well, what didn't and suggest one change if they were to do the project again
Technical Knowledge/skills	*build structures, exploring how they can be made stronger, stiffer and more stable.* *Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.* *use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from*	To know how to use scissors safely To know how to safely use a hammer with adult supervision To know how to join a variety of natural materials (glue, masking tape, nails) To know how to strengthen a structure to enable it to stand freely	To know how a slider works To know how a lever works To know how to make a simple slider and lever using split pins	know how to wash hands before preparing food and to maintain cleanliness throughout the process To use a **butter knife** to spread butter To use an **everyday dinner knife to cut soft fillings** and sandwich To understand which sandwich fillings and types of bread are healthy To understand what role sandwiches play in a balanced diet	To use an **everyday dinner knife to cut soft fillings** e.g. ham To use a **cheese grater** to grate cheese To use a **spoon** to **hollow out** a vegetable To **peel the skin** from some vegetables To mix ingredients together	To know how a wheel works To know how an axle works To know how a chassis works To know how to join wheels to axles To know how to use a saw safely to cut through dowel To know how to use a ruler to measure accurately (to the nearest cm)	To know how to use a **running stitch** to join 2 pieces of fabric together **(binca/felt with pre-punched holes)** To know how to thread **wool** through a **large plastic needle with a large eye** To know how to use glue to attach a range of finishes to the puppet To know how to use paint pens to add finishing details

Design Technology: Lower Key Stage 2							
	Year 3				Year 4		
Process	**Main Objective**	**Cooking – healthy, seasonal soup**	**Textiles - Iron age tunic**	**Construction – freestanding – earthquake-proof building**	**Electronics – electronic game**	**Textiles – Roman coin purse**	**Cooking – sustainable rainforest biscuits** **3D design and printing – biscuit cutter**
Investigate	• *Research existing products and key individuals who have contributed towards the development of the product being studied.* • *understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed*	Investigate the seasonality of fresh produce Investigate the nutritional value of a variety of soups (shop bought/homemade) To investigate how and where vegetables are grown To taste a variety of soups and ingredients and describe their characteristics using appropriate vocabulary.	Investigate what a traditional tunic is and who used to wear them Investigate different materials and their properties, evaluating how suitable they would be to make a tunic Investigate how clothing is made from a 2D paper pattern which is then used to cut out the correct size and shaped pieces. Investigate key individuals – Christi Johnson – sustainable fashion designer and user of natural dyes OR relevant fashion designing	Investigate the challenges surrounding architecture posed by earthquakes To examine a range of existing real-life earthquake-proof buildings and focus on their design features Investigate key individuals: William (Bill) Henry Robinson – inventor of lead rubber bearing seismic isolation device William Pereira – famous for futuristic designs of landmark buildings such as the Transamerica Pyramid in San Francisco	Investigate a range of existing light-up electronic battery-powered products. Investigate how lights can be switched on and off using a remote control or a control device. Investigate a range of switches – **push to make, push to break & toggle switch.** Investigate how they work in a circuit.	Investigate a range of money containers/purses, examining the range of textiles, stitches and fastenings used. Consider the source of different materials – leather from cows, cotton from plants. Investigate a range of different fastenings – discuss which of these would have been available in the Roman era and which more modern additions are.	Investigate a range of ingredients that are derived from the rainforest and understand how they are sourced and ethical implications this can have. To develop skills in evaluating and describing food characteristics, building on the vocabulary learned in Year 3. To investigate how organisations such as the Rainforest Alliance and Fairtrade ensure that ingredients originating from the rainforest reach our supermarket shelves in an ethical and sustainable way. To know the source of basic ingredients used to make biscuits (milk, butter, sugar, flour) To know that products are designed for different users and this is an important consideration when designing. To understand what a 3D printer is and what it is used for. Investigate key individuals – Alex Atala – a chef who cooks with indigenous Brazilian ingredients

Designing	*use research & develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups* *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design* *understand and apply the principles of a healthy and varied diet*	**Generate realistic ideas** through discussion with peers and adults to create a design based on **a given design specification,** paying attention to appearance, texture, taste and aroma as well as seasonality and nutritional information. Design a soup using annotated sketches stating which ingredients they are using and why – reasoning why they have chosen each ingredient with reference to nutrition and seasonality. **(2 designs)** Choose a final design and explain with justification, why they have chosen that one. To plan and order the main stages of making their chosen design/recipe, listing ingredients, utensils and equipment.	**Generate realistic ideas** through discussion with peers and adults to create a design based on **a given design specification,** paying attention to appearance and practicality. Design a tunic using annotated sketches stating which materials they are using and why – reasoning why they have chosen each material with reference to appearance and practicality **(2 designs)** Choose a final design and explain with justification, why they have chosen that one. To plan and order the main stages of making their chosen design, listing resources and equipment needed.	**Generate realistic ideas** through discussion with peers and adults to create a design based on **a given design specification,** paying attention to strengthening methods Design a structure using annotated sketches stating which materials they are using and why – reasoning why they have chosen each material with reference to strengthening and appearance **(2 designs)** Choose a final design and explain with justification, why they have chosen that one. To plan and order the main stages of making their chosen design, listing resources and equipment needed.	**Generate and clarify realistic ideas** through discussion with peers and adults to **create a simple design specification** and design, paying attention to appearance and practicality. Design an electronic game using annotated sketches stating which materials they are using and why – reasoning why they have chosen each material with reference to appearance and practicality **(2 designs)** Choose a final design and explain with justification, why they have chosen that one, evaluating against their design specification. Produce a detailed circuit diagram – using the appropriate symbols – to represent their product To plan and order the main stages of making their chosen design, listing resources and equipment needed.	**Generate and clarify realistic ideas** through discussion with peers and adults **to create a simple design specification** and design, paying attention to appearance and practicality. Design a coin purse using annotated sketches stating which materials they are using and why – reasoning why they have chosen each material with reference to appearance and practicality **(2 designs)** Choose a final design and explain with justification, why they have chosen that one, evaluating against their design specification. Produce a mock-up of design ideas using alternative materials to use as a template to make a paper pattern. To plan and order the main stages of making their chosen design, listing resources and equipment needed.	**Generate and clarify realistic ideas** through discussion with peers and adults **to create a simple design specification** and design, paying attention to appearance, texture, taste and aroma. Design biscuits using annotated sketches stating which ingredients they are using and why – reasoning why they have chosen each ingredient with reference to sustainability and ethics **(2 designs)** Choose a final design and explain with justification, why they have chosen that one, evaluating against their design specification. To plan and order the main stages of their chosen design/recipe, listing ingredients, utensils and equipment and suggesting changes to existing recipes. To use CAD to design for 3D printing
Making	• *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 wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities* • *prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques*	Independently select and use appropriate equipment and utensils to prepare and combine ingredients. **With adult supervision,** children to use a variety of simple utensils (including **utility knives**) and cook their soup over heat.	Independently choosing appropriate resources, children to make their designed product. Use a simple paper pattern template to cut 2 pieces of equal size and shape fabric To cut, shape and join hessian fabric to make a simple garment	Independently choosing appropriate resources, children to make their designed product. Use finishing and decorative techniques suitable for the product they are making	Independently choosing appropriate tools and resources, children to make their designed product with increasing independence To select from and use materials and components, including construction materials and electronic components according to their functional properties and aesthetic qualities.	Independently choosing appropriate resources, children to make their designed product with increasing independence Use a self-made paper pattern template to cut 2 pieces of equal size and shape fabric To cut, shape and join fabric to make a coin purse with embellishment and a fastening	Independently, select and use appropriate equipment and utensils to prepare and combine ingredients, as well accurately weighing ingredients. Evaluate the texture of the dough and the success of the product throughout the making process.

Evaluating	*investigate and analyse a range of existing products* *evaluate their ideas & products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	Evaluate the final product against the given design specification, reflecting on nutrition and seasonality. Reflect on what went well and what did not go so well. Suggest some changes for the future.	Evaluate the final product against the given design specification, reflecting on appearance and practicality. Reflect on what went well and what did not go so well. Suggest some changes for the future.	Evaluate the final product against the given design specification, reflecting on strength and appearance. Reflect on what went well and what did not go so well. Suggest some changes for the future	Evaluate the final product against the created design specification, reflecting on appearance and practicality. Evaluate the success of the product and reflect on the constraints of the design. Suggest some changes for the future and explain how these could be achieved.	Evaluate the final product against the created design specification, reflecting on appearance and practicality. Evaluate the success of the product and reflect on the constraints of the design. Suggest some changes for the future and explain how these could be achieved.	Evaluate the final product against the created design specification, reflecting on sustainability and ethics. Evaluate the success of the product and reflect on the constraints of the design. Suggest some changes for the future and explain how these could be achieved. Make changes to the original CAD design based on evaluation.
Technical Knowledge/skills	• *apply their understanding of how to strengthen, stiffen and reinforce more complex structures* • *understand and use mechanical systems in their products [e.g. gears, pulleys, cams, levers and linkages]* • *understand and use electrical systems in their products [e.g. series circuits incorporating. switches, bulbs, buzzers, motors]* • *apply their understanding of computing to program, monitor and control their products.*	To know how to use utensils and equipment, safely and hygienically. To know how to cook on a hob safely. To know how to correctly hold and use **utility knives** (bridge and claw grips/holds) To know the importance of good hygiene when working with food.	To know how to thread a **large-eyed, plastic needle** To know how to use a **running stitch** and **overstitch** to join 2 pieces of fabric together (**hessian**) Using a **pre-made pattern**, know how to cut out 2 equal size and shape pieces of material.	To use a construction kit to build 2-D frameworks To know how different shapes provide different levels of strength To understand how to reinforce using **cross-hatching** To know how to use a range of joining methods to build strong, solid, sturdy structures	To know how to work safely around electricity To be able to make a **simple circuit, incorporating a battery, light bulb, simple on/off switches and connecting wires** To know how to find a fault in a simple circuit To know that a variety of metals will conduct electricity Cut, shape, join and finish with some accuracy	To know how to thread a **metal needle** with increasing accuracy, efficiency and independence. To know how to use a **running stitch**, **overstitch** and **blanket stitch** to join 2 pieces of fabric (**poly-cotton or other pupil-chosen material**) together and how to use a **back tac** stitch to strengthen and secure stitching. To be able to use a range of stitches to create strong seems, and attach a range of fastenings and embellishments. To measure, tape/pin, cut and join fabric with some accuracy To create and use **their own paper pattern** accurately	To know how to use utensils and equipment, safely and hygienically – and how to handle these carefully when washing up. To know how to use an oven safely. To **apply prior knowledge of bridge and claw grips/holds when using utility knives.** To know the importance of good hygiene and how this is achieved when working with food. To use weighing scales to accurately measure out ingredients. To be able to design a basic single-outline object with CAD.

Design Technology: Upper Key Stage 2							
		Year 5			Year 6		
		Textiles – Greek sandals	**Cooking - bread**	**Mechanisms – pulley system**	**Cooking – chocolate truffles**	**Electronics/control - alarm system**	**Textiles – upcycling 3D design and printing – embellishment**
Investigate	• *Research existing products and key individuals who have contributed towards the development of the product being studied.* • *understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed*	Investigate a range of existing sandals and examine the materials, stitching, joining and embellishment methods used. Discuss what makes them appropriate for the purpose and user. To understand that designers have to consider appearance, function, cost and safety when designing products. To explore how many different materials can be used on a product for different purposes e.g. to stiffen, to provide longevity and some for appearance. To research how sandals have changed since the Ancient Greeks wore them. Research key individual – Christian Louboutin and how he is famous for making fashionable footwear	Investigate a variety of bread products from a range of cultures and traditions and periods in history. To know that bread products are an important part of a balanced diet and can be eaten in a variety of ways. To know the nutritional value of bread. To further develop skills in evaluating and describing bread characteristics, record a sensory profile for each one tasted. Comment on personal preferences, like and dislikes. To investigate the process involved in making flour and how this compares to how the Anglo Saxons produced flour. Research key individual – Thomas Warburton	Investigate, analyse and evaluate existing everyday products and existing or pre-made toys that incorporate pulley systems. Explore how pulley systems work and what they are used for. Research the history of the pulley system, where it originated from and its use throughout history Research key individuals: Archimedes of Syracuse invested the first compound pulleys 287BC-212BC 1730 Benjamin Franklin devised a rope pulley-system to lift a printing press up 3 floors.	Investigate a range of existing chocolate products – conduct taste tests and produce a hedonic sensory analysis for each product tasted. To know the source of different staple ingredients for chocolate products. To investigate a range of dietary needs and allergies and how these can be accommodated in chocolate products. Research key individual – John Cadbury	Investigate a range of battery-powered products, including those which are commercially available. (if practical, disassemble these) Investigate different types of alarm systems and how they work. Know what their purpose is. Investigate a range of switches, building on knowledge from year 4 on **push to make, push to break and toggle switches**. Introduce different types of switches - **reed switches and tilt switches.** Research key individual – Marie Van Brittan Brown - inventor of the first home alarm system	Investigate how different materials are manufactured and the environmental impact the fashion industry has. To investigate the ethical implications of “fast fashion” Research fashion brands and companies that upcycle clothing. To understand what a 3D printer is, how it works, the key components and what it is used for. Research sustainable/eco-conscious fashion brands such as Bode and 1/off Paris

Designing	*use research & develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups* *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design* *understand and apply the principles of a healthy and varied diet*	Generate and clarify ideas through discussion with peers and adults to **create a detailed design specification and design**, paying attention to the purpose and user of the product Design a pair of sandals using **annotated sketches and exploded diagrams** stating which materials they are using and why – reasoning why they have chosen each material with reference to key the role they play in the final product (strengthening/appearance etc..) **(3 designs)** Choose a final design and explain with justification, why they have chosen that one, critically evaluating against their design specification. To plan and order the main stages of making their chosen design, listing resources, materials and equipment they will need.	Generate and clarify ideas through discussion with peers and adults **to create a detailed design specification and design**, paying attention to the sensory profile of the desired product. Modify and adapt a basic bread recipe, indicating the type of flour, extra ingredients and the stage in the process that they will be added. Design bread using annotated sketches stating which ingredients they are using and why – reasoning why they have chosen each ingredient with reference to key ingredients and the role they play in the cooking process **(3 designs)** Choose a final design and explain with justification, why they have chosen that one, critically evaluating against their design specification. To plan and order the main stages of making their chosen design/recipe, listing ingredients, utensils and equipment they will need as well as the quantity of ingredients.	Generate and clarify ideas through discussion with peers and adults to **create a detailed design specification and design**, paying attention to the purpose and user of the product Design a pulley system using **annotated sketches and exploded diagrams** stating which materials they are using and why – reasoning why they have chosen each material with reference to key the role they play in the final product (strengthening/appearance etc..) **(3 designs)** Choose a final design and explain with justification, why they have chosen that one, critically evaluating against their design specification. To plan and order the main stages of making their chosen design, listing resources, materials and equipment they will need	To **generate innovative ideas by carrying out research, using surveys, interviews, questionnaires and web-based resources.** To **draw up a detailed specification for their design, working within a budget.** To produce **detailed, cross-sectional sketched designs** for their truffles, labelling key ingredients used. **(4 designs)** To evaluate their initial ideas against the design specification and identify and explain any constraints e.g. cost To plan and order the main stages of making their chosen design/recipe, listing ingredients, utensils and equipment they will need as well as the quantity of ingredients. **To work out the overall cost of the product and profit margins**.	**To generate innovative ideas by carrying out research, using surveys, interviews, questionnaires and web-based resources.** To **draw up a detailed specification for their design – paying close attention to user and purpose.** Develop, model and communicate ideas through **talking, drawing, exploded diagrams, templates, mock-ups and prototypes. (4 designs)** To evaluate their initial ideas against the design specification and identify and explain any constraints e.g. cost of materials To plan and order the main stages of making their chosen design, listing resources and equipment they will need.	**To generate innovative ideas by carrying out research, using surveys, interviews, questionnaires and web-based resources.** To **draw up a detailed specification for their design – paying close attention to user and purpose.** Develop, model and communicate ideas through talking, **drawing, exploded diagrams, templates, mock-ups and prototypes and computer aided design**. **(4 designs)** To evaluate their initial ideas against the design specification and identify and explain any constraints e.g. cost of materials To plan and order the main stages of making their chosen design, listing resources and equipment they will need. To confidently and independently use CAD to design more complex items for 3D printing.
Making	• *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 wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities* • *prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques*	Select and use the most appropriate equipment and resources to make their product. Work independently and systematically by using their step-by-step plan to sequence their work. Critically evaluate the success of the product throughout the making process.	Select and use the most appropriate equipment and utensils to prepare and combine ingredients, as well accurately weighing wet and dry ingredients. Critically evaluate the texture of the dough and the success of the product throughout the making process.	Select and use the most appropriate equipment, tools and resources to make their product. Work independently and systematically by using their step-by-step plan to sequence their work. Critically evaluate the success of the product throughout the making process.	Select and use the most appropriate equipment and utensils to prepare and combine ingredients, as well accurately weighing ingredients. Critically evaluate the success of the product throughout the making process, acting decisively to make changes to the recipe when necessary,	Select and use the most appropriate equipment and resources to make their product. Work independently and systematically by using their step-by-step plan to sequence their work to make a high-quality product. Critically evaluate the success of the product throughout the making process.	Select and use the most appropriate equipment and resources to make their product. Work independently and systematically by using their step-by-step plan to sequence their work to make a high-quality product. Critically evaluate the success of the product throughout the making process.

Evaluating	• *investigate and analyse a range of existing products* • *evaluate their ideas & products against their own design criteria and consider the views of others to improve their work* • *understand how key events and individuals in design and technology have helped shape the world*	Evaluate the final product against the created design specification, reflecting on the purpose and user of the product Critically evaluate the success of the product and reflect on the constraints of the design. Suggest some detailed changes for the future and explain how these could be achieved. Draw comparisons between their end product and commercial products they are familiar with (explored in the investigate stage).	Evaluate the final product against the created design specification, reflecting on the sensory profile of the product. Critically evaluate the success of the product and reflect on the constraints of the design. Suggest some detailed changes for the future and explain how these could be achieved. Draw comparisons between their end product and commercial products they are familiar with (explored in the investigate stage).	Evaluate the final product against the created design specification, reflecting on the purpose and user of the product Critically evaluate the success of the product and reflect on the constraints of the design. Suggest some detailed changes for the future and explain how these could be achieved. Draw comparisons between their end product and commercial products they are familiar with (explored in the investigate stage).	Evaluate the final product against the created design specification, critically reflecting on the sensory qualities of the product. Critically evaluate the success of the product and reflect on the constraints of the design. Suggest some detailed changes for the future and explain how these could be achieved. Draw comparisons between their end product and commercial products they are familiar with (explored in the investigate stage).	Evaluate the final product against the created design specification, critically reflecting on the desired qualities of the product and assessing its appropriateness for purpose and user. Critically evaluate the success of the product and reflect on the constraints of the design. Suggest some detailed changes for the future and explain how these could be achieved. Draw comparisons between their end product and commercial products they are familiar with – how does the level of quality compare?	Evaluate the final product against the created design specification, critically reflecting on the desired qualities of the product and assessing its appropriateness for purpose and user. Critically evaluate the success of the product and reflect on the constraints of the design. Suggest some detailed changes for the future and explain how these could be achieved. Draw comparisons between their end product and commercial products they are familiar with – how does the level of quality compare? Make changes to the original CAD design based on self and peer evaluation. Re-print the amended design and evaluate changes.

Technical Knowledge/skills	• *apply their understanding of how to strengthen, stiffen and reinforce more complex structures* • *understand and use mechanical systems in their products [e.g. gears, pulleys, cams, levers and linkages]* • *understand and use electrical systems in their products [e.g. series circuits incorporating. switches, bulbs, buzzers, motors]* • *apply their understanding of computing to program, monitor and control their products*	To know how to thread a metal needle with accuracy, efficiency and independence. To build on their knowledge of how to use a **running stitch,** and **overstitch** to join 2 pieces of fabric together and how to use a **back tac** stitch to strengthen and secure stitching. To understand the role that glue can have in strengthening products. To be able to use a range of stitches to create strong seems, and attach a range of fastenings and embellishments to make the product aesthetically pleasing To measure, tape/pin, cut and join fabric with accuracy To create and use their **own paper pattern accurately by measuring their feet.**	To know how to use utensils and equipment, safely and hygienically – and how to handle these carefully when washing up and storing. To use weighing scales and measuring jugs to accurately measure out wet and dry ingredients. To understand the role that yeast plays in making bread. To be able to knead bread and know why this is an important process. To know how to use a variety of cooking methods to cook bread, including baking, frying, grilling, boiling and the effect this has on the end product. To know how to use an oven, grill and hob safely. To know how to use a **bread knife** to safely slice bread. To know the importance of good hygiene and how this is achieved when working with food.	Understand how a pulley system works and the considerations that go into making them Understand that 2 different sized pulleys can combine Know how to change the speed and direction of a pulley system To be able to measure, mark, cut, shape and join using tools such as junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames. To work safely with an increasing amount of independence	To be able to roll, shape and form truffles from a mixture. To know how to use a hob safely to melt chocolate and butter. To use weighing scales and measuring jugs to accurately measure out wet and dry ingredients. To know the role that temperature plays when making products and how heating and cooling can effect ingredients. To work safely and hygienically at all times, including when washing up and storing equipment.	To know how to work safely around electricity To build on knowledge from Year 4 of how to make manually controlled simple series circuits with batteries, bulbs, buzzers, motors and **different types of switches (toggle, push to make, push to break, tilt, reed).** To know the difference between “input” and “output” components To be able to correct faults in increasingly more complex circuits To be able to make a variety of home-made switches using classroom materials (push to make, push to break, tilt) To be able to suggests the appropriate switch for different purposes and give reasoned justification why To be able to join electrical components to ensure secure connections To apply understanding of computing to program, monitor and control products	To know how to thread a needle with accuracy, efficiency and independence. To build on their knowledge of how to use a **running stitch** and **overstitch** to join 2 pieces of fabric together and how to use a **back tac** stitch to strengthen and secure stitching. To understand the role that glue can have in strengthening products. To use embellishment stitches such as **cross stitch** and **chain stitch** to add embellishment to their piece of clothing. To create a hem on material to create neat edges and prevent fraying. To be able to use a range of stitches to create strong seems, and attach a range of fastenings and embellishments, including fabric paint and sequins to make the product aesthetically pleasing To measure, tape/pin, cut and join fabric with accuracy To be able to use CAD to design a more complex 3D object that incorporates holes and merged shapes.