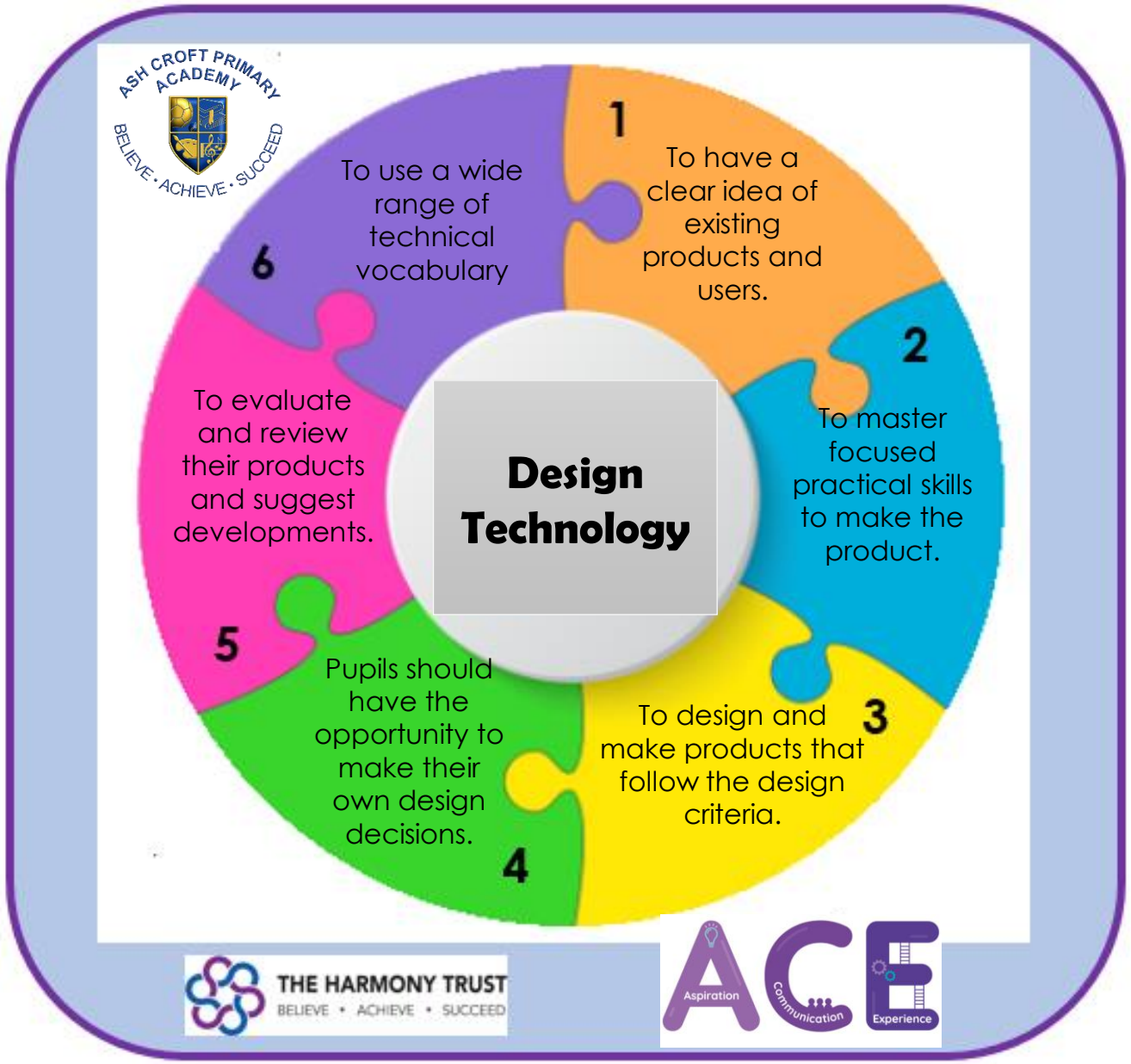
Subject Intent



Design & Technology Intent

At Ash Croft Academy, we aim to deliver a curriculum that helps children aspire, collaborate and experience a variety of opportunities. We want to help children develop as designers and creators through a range of learning experiences that are underpinned by our key intentions for learning in this subject:

1. It is our intention that pupils will be **user focused** designers. Considering the values, needs and preferences of their chosen specific target group.
2. It is our intention that all our children can clearly **communicate the purpose** of the products they design. Defining what function their product for fills.
3. It is our intention that all pupils will design and make **functional** products to effectively fulfil the users needs. We want them to have a **knowledge** of a range of techniques, skills, tools and materials. We want them to have experiences as part of a process, to realise actual designers use a range of technologies to achieve the desired outcome. They will complete lessons that are designed to expose them to a wide range of skills and processes.
4. It is our intention that all children will have opportunities to make individual **design decisions**. To be **innovative** and confident in the decisions they make, allowing them to be creative, technical and draw on knowledge from other subjects. We want children to develop their sense of innovation by taking part in engaging lessons that ignite their creativity.
5. It is our intention that all children will be able to **evaluate** and **reflect** on their designs. We want them to be able to say how their work compares to others and know their next steps in mastering skills and techniques.
6. It is our intention that all children will have a progressive, **technically challenging**, vocabulary to describe and explain their process.

Design & Technology Implementation

IMPLEMENTATION - How do we implement our design and technology curriculum?

1. Units of study that are a requirement of the national curriculum have been mapped out to ensure progression in skills takes place. This ensures that skills are revisited over the course of Key Stage 1 and Key Stage 2.

2. Key knowledge, skills/techniques and understanding are identified at the start of each art unit of work. These link back to our key intentions, ensuring that all of the key intentions are covered at least once within each art unit of work.

3. All of our DT lessons are designed to link to our ACE curriculum drivers.

4. Lessons are thoughtfully sequenced with opportunities for metacognition opportunities using quizzes and revision of learning. See MTP guidance frame.

5. DT skills are mapped out progressively within each year group ensuring that children make progress in their skill-set year on year.

*6. Design and Technology projects are linked to other foundation subjects to enable children to build on their prior knowledge.

Design & Technology Implementation

	Autumn	Spring	Summer
EYFS	Food Technology Celebration food	Joining skills Rocket and vehicle making	Application of joining skills in own models 3D junk modelling
Year 1	Mechanisms Levers and sliders moving pictures linked to Christmas cards	Pop up toys Linked to toy story	Food Technology Making a healthy picnic
Year 2	Food Technology Plants we eat preparing fruit and vegetables Fruit salad	Wheels and Axels Linked to fire engines	Textiles Templates and joining Sewing puppets
Year 3	Food Technology Healthy and varied diet Bread (varied designs and flavours) used to make a healthy sandwich	Shell structures Boxes	Pneumatics Making a moving dragon
Year 4	Sewing Stuffed animal toys/ear muffs	Food Technology Healthy and varied diet Filled Yorkshire puddings	Electrical and Mechanical Systems Simple circuits and switches Illuminated sign/model
Year 5	Food Technology Celebrating culture and seasonality Fajitas	Frame Structures Make the strongest bridge (linked to rivers)	Electrical and Mechanical Systems More complex switches and circuits Moon buggies
Year 6	CAM Mechanisms Making a toy for a children in Reception	Textiles/sewing Shopping bag incorporating art skills batik	Food Technology Celebrating culture and seasonality Curry with seasoned vegetables

Key Outcomes Topic 1 Autumn KS1

	Year 1	Year 2
Mechanisms levers and moving pictures	1. Evaluate and investigate existing products Children will understand what an existing moving picture is within a book, who it is for and how it works. Children will attempt to join card in different ways. Introduce key vocabulary. **2. Practical skills** Children will master practical skills of sliders using cutting and joining skills. Children will master practical skills of levers and pivots using split pins. **3. Design product** Children will make a simple plan before making and label the materials they will need. **4. Make product** Children will make a product which moves using both a slider and a lever using appropriate resources and tools **5. Evaluate product** Pupils will explain to someone else how they made their product. Talk about their design ideas and what they have made Children will make simple judgements of how the product met their design ideas.	
Plants and Vegetables fruit salad		1. **Evaluate existing products** Children will understand what an existing fruit salad contains who it is for and what ingredients are used in it. Children will Identify how the ingredients have been prepared looking at sample recipe cards. **2.Practical skills** Pupils will master practical skills of washing, chopping and grating. Explore where products have come from and how they have travelled from farm to fork. **Food Hygiene** 3. Children will know the importance of food hygiene and safety when cooking. **4. Design product** Children will plan the cooking equipment and their list of ingredients including measures based on their own personal preference. **5. Make product** Children will wash, peel, chop and grate ingredients to make their fruit salad following their design. **Evaluate product** Children will evaluate their product explaining what went well and what they might change next time.

Key Outcomes Topic 1 Autumn KS2

Year 3

Food Technology – Healthy and varoed diet – Bread making

1.Evaluate and investigate existing products
Children will Identify the difference between the appearance, texture and taste of a range of breads (plaits, rolls, loafs).
Identify list of ingredients and flavours used in the breads.
Introduce key vocabulary.

2. Food Hygiene and safety
Children will prepare the work surface and ingredients hygienically using appropriate utensils and will work safely when using a heat sources.

3. Practical skills
Pupils will master practical skills of following a recipe to make basic bread

4. Market Research
Children will understand and gather information about what a particular group or people want from a product. Pupils will taste a selection of herbs and flavours commonly used in bread making and sandwich fillings

4.Design Product
Pupils will use the results from their market research to design a bread. Children will use labelled diagrams and write out the recipe. (English session)

5. Make Product
Pupils will follow their plan, choosing and using the correct equipment. They will use cooking techniques such as: chopping, peeling, grating slicing, mixing, spreading, kneading and baking.
Pupils will measure ingredients to the nearest gram accurately.
They will describe how food ingredients come together.

6. Evaluate Product
Pupils use design criteria to evaluate product– identifying both strengths and areas for development
Children consider the views of others, including intended user, whilst evaluating product

Year 4

Sewing – stuffed toy

. **1. Evaluate and investigate existing products**
Investigate, anaylse and evaluate textile products of stuffed toys. Understand how stuffed toys are made and what they are used for. Make drawings of existing products stating the user and purpose. Label the main parts including fabrics, fastening and joining techniques used.

2. and 3 Master practical skills
Investigate fabrics to determine which is best for the purpose of the product being created Explore and evaluate joining techniques including a range of stitches – running, hemming stitch, cross stitch. Know different finishing techniques such as – sewing on buttons and using applique to join smaller bits of fabric for decoration.

4. Design product
Understand who the product is for and what it needs to do. Make a step-by-step plan before making and label the fabrics and list of equipment needed. Identify a user and a purpose and decide on the design brief together.

5. Make product
Make the stuff toy using the design criteria. Select from and use a range of tools and equipment to make the product ensuring appropriate finishing techniques are used.

6. Evaluate product
Evaluate throughout the making and the final product against the intended purpose and with the intended user, drawing on the design criteria previously agreed.

Year 5

Food Technology Making Fajitas

1. Evaluate and investigate existing products
Children will identify the difference between the appearance, texture and taste of a range of fajita spice selections on the market.
Identify list of ingredients and flavours used in the fajitas.
Research selection of fillings that are commonly used.
Introduce key vocabulary.

2. Food Hygiene and safety
Children will prepare the work surface and ingredients hygienically using appropriate utensils and will work safely when using heat sources.
Children will explore where ingredients have come from and seasonability.

3. Practical skills
Pupils will master practical skills of following a simple recipe to make basic fajitas. Children will understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). They will demonstrate a range of baking and cooking techniques when following a simple recipe.

4. Market Research
Children will understand and gather information about what a particular group or people want from a product. Pupils will taste a selection of herbs, spices and flavours commonly used in fajitas.

5.Design Product
Pupils will use the results from their market research to design the fajita filling. Children will use labelled diagrams and write out the recipe. (English session)

6. Make Product
Pupils will follow their plan, choosing and using the correct equipment. They will use cooking techniques such **as: chopping, peeling, grating slicing, mixing, spreading, frying.**
Pupils will measure accurately and calculate ratios of ingredients to scale up or down from a recipe.
They will describe how food ingredients come together.

7. Evaluate Product
Pupils will refine work and techniques as work progresses, continually evaluating the recipe through tasting and considering appearance.
Pupils use design criteria to evaluate product – identifying both strengths and areas for development
Pupils consider the views of others, including intended user, whilst evaluating product.

Year 6

CAM Mechanisms – Design a toy for a child in EYFS

1. Evaluate and investigate existing products
Pupils will identify a range of products that use a range of Cams - mechanical systems such as egg, off-centre, peg and snail.
Pupils will investigate the types of movement created by different shaped cams. (oscillating, reciprocating and rotating).
Pupils will identify the range of materials and joining techniques used to make the existing products.
Introduce key vocabulary.

2. Practical skills
Children will master practical skills of making simple models of different types of cams using precut cams made from MDF.
Children will demonstrate how to use a hand drill safely.
Pupils develop measuring, making, cutting, shaping and joining techniques using wood working tools.

3. Market Research
Children will understand and gather information about what Reception aged children want from a moving toy using a survey.

4. Design product
Pupils use their market research to inform their plans and ideas.
Pupils show that they consider culture and society in their plans and designs.

5. Make product
Pupils will follow their design to make the toy.

6. Evaluate product
Children will show that I can test and evaluate my products
children will evaluate their product against a design criteria.

ACE Aspiration Communication Experience

Key Outcomes Key Stage 1 Topic 2

	Year 1		Year 2	
Pop up Toys	1. Evaluate and investigate existing products Children will understand what an existing pop up toys there are on the market and will investigate who it is for and how it works. Children will explore the mechanisms to make the toys pop up. Introduce key vocabulary. **2. Practical skills** Children will master practical skills of making a simple pop up tube toy. Children will master practical skills of cutting and joining card, fabric, elastic bands and dowel. **3. Design product** Discuss design brief with pupils – who is it for, what should the product do? Children will make a simple plan before making and label the materials they will need. **4. Make product** Children will make a product which pops up **5. Evaluate product** Pupils will explain to someone else how they made their product talking about their design ideas and what they have made. Children will make simple judgements of how the product met their design ideas.	Wheels and axels to make a fire engine	1. Evaluate and investigate existing products Children will understand what an existing wheeled product is such as a toy fire engine. They will understand how the product works and what it is used for. They will make a drawing of a wheeled product stating the user and purpose and labelling the main parts. Introduce key vocabulary. **2. Practical skills** Children will use constructions kits to investigate wheels and axels. Children will show different ways of making axel holders and know the importance of the axel running freely within the holders. **3. Design product** Children will make a simple plan before making and label the materials they will need identifying a user and a purpose. **4. Make product** Children will make their wheel and axel product using their design. Children will choose appropriate finishing techniques. **5. Evaluate product** Pupils will explain to someone else how they made their product and how it follows their design brief. Pupils will evaluate their product identifying strengths any changes they made.

Key Outcomes Key Stage 2 Topic 2

Shell Structures to make a packaging for a chosen product – Firework display box

Year 3

1 Evaluate and investigate existing products
Children investigate a collection of different shell structures including packaging. Children take small packaging apart identifying and discussing parts of a net including tabs. Children evaluate existing products to determine which designs are the most effective.

2 and 3 Master practical skills
Children use kit parts with flat faces to construct nets. Pupils experiment with assembling nets in numerous ways. Children explore skills and techniques of scoring, cutting out and assembling using pre-drawn nets. Children explore how to stiffen and strengthen their shell structures e.g. folding and shaping, corrugating, ribbing and laminating.
Children discuss and explore the graphic techniques and media that could be used to achieve the desired appearance of their products.

4. Design product
Develop a design brief together.
Children are aware of the uses and purpose of their shell structure. Children make annotated sketches and prototypes to develop, model and communicate their ideas for the product.

5. Make product
Children make their product using appropriate tools and skills they have learnt. They choose materials for both its suitability and its appearance. Children work with accuracy to create an attractive product.

6. Evaluate product
Children evaluate throughout the making and the final product against the intended purpose and with the intended user, drawing on the design criteria previously agreed.

Food Technology – Healthy and varied diet – Filled Yorkshire pudding

Year 4

1. Evaluate and investigate existing products
Children will identify the difference between the appearance, texture and taste of a range of Yorkshire puddings on the market.
Identify list of ingredients and flavours used in the Yorkshire pudding. When looking at a selection of fillings, discuss the importance of a healthy and varied diet.
Introduce key vocabulary.

2. Food Hygiene and safety
Children will prepare the work surface and ingredients hygienically using appropriate utensils and will work safely when using heat sources.

3. Practical skills
Pupils will master practical skills of following a recipe to make basic Yorkshire pudding.

4. Market Research
Children will understand and gather information about what a particular group or people want from a product. Pupils will taste a selection of herbs and flavours commonly used in Yorkshire pudding. Yorkshire pudding recipes | BBC Good Food

4.Design Product
Pupils will use the results from their market research to design a Yorkshire pudding. Children will use labelled diagrams and write out the recipe. (English session)

5. Make Product
Pupils will follow their plan, choosing and using the correct equipment. They will use cooking techniques such as: chopping, peeling, grating, mixing, spreading, kneading and baking.
Pupils will measure ingredients to the nearest gram accurately.
They will describe how food ingredients come together.

6. Evaluate Product
Pupils use design criteria to evaluate product – identifying both strengths and areas for development
Refine work and techniques as
work progresses, continually evaluating the recipe through tasting and considering appearance.

Structures – making the strongest bridge

Year 5

1 Evaluate and investigate existing products
Investigate and make annotated drawings of a range of portable and permanent frame structures, e.g. tents, bus shelters, umbrellas, famous bridges. Research key events and individuals lined to frame structures e.g. Stephen Sauvestre – a designer of the Eiffle Tower, Thomas Farnolls Pritchard – designer of the Iron Bridge.

2 and 3 Master practical skills
Use construction kits to build 2D frameworks. Compare the strength of square frameworks with triangular frameworks. Explore reinforcing square frameworks using diagonals to develop an understanding of triangulation to add strength to a structure.
Explore how to strengthen these structures. Demonstrate accurate use of tools and equipment used to join framework materials together.

Design product
Be aware of the users and purpose of their frame structure.
Make a step by step plan listing tools and materials.
Annotate sketches and prototypes to develop, model and communicate ideas for the product.

5. Make product
Formulate a clear plan, including a step-by-step list of what needs to be done and list of resources to be used.
Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. Use finishing techniques suitable for the product that is designed.

6. Evaluate product
Critically evaluate the frame structure against the design specification, intended user and purpose, identifying strengths and areas for development and carrying out appropriate tests.

Textiles – Shopping bag using batik

Year 6

1 Evaluate and investigate existing products
Children investigate, analyse and evaluate a range of existing products which have been produced by combining fabric shapes. Children investigate and anaylse how existing products have been constructed by disassembling a product.

2 and 3 Master practical skills
Children develop skills of threading needles and joining textiles using a range of stitches and joining skills using seams. Children will learn how to start and finish off a row of stitches.

4. Design product
Children will generate ideas on how to follow a design brief and by carrying out research of the intended user and purpose through surveys and questionnaires.
Children communicate ideas through detailed annotated drawings which indicate design decisions, types of fabrics used and the use of stitches.

5. Make product
Children make high quality products applying knowledge and skills. Children use a range of decorating techniques to ensure a well-finished product that matches the intended user and purpose.

6. Evaluate product
Children evaluate both as they proceed with their work and the final product in use, comparing it to the original design specification. ta king into a c c o u n t t h e v i e w s o f others w h e n identifying improvements.

Pupils will critically evaluate the quality of the design, the manufacture, functionality and fitness for intended purpose and user.

Key Outcomes Key Stage 1 Topic 3

Year 1		Year 2	
Food Technology Healthy picnic	1. **Evaluate existing products** Children will understand what a healthy picnic is, who it is for and what ingredients are used in it. Children will identify how the ingredients have been prepared looking at a sample recipe card. **2.Practical skills** Pupils will master practical skills of chopping, spreading and toasting. Children will taste a variety of toppings and a selection of fruit saying which is their favourite using key vocabulary to describe taste. Explore where products have come from and how they have travelled from farm to fork. **Food Hygiene** 3. Children will know the importance of food hygiene and safety when cooking. **4. Design product** Children will plan the cooking equipment and their list of ingredients including their own personal preference of a healthy filling. **5. Make product** Children will wash, peel, chop ingredients to make their topping following their design. **Evaluate product** Children will evaluate their product explaining what went well and what they might change next time.	Sewing - puppets	1. Evaluate and investigate existing products Children will understand how puppets are made and what they are used for. They will make a drawings of existing products stating the user and purpose and labelling the main parts including fabrics, fastening and joining techniques used. Introduce key vocabulary. **2. Practical skills** Pupils will investigate fabrics to determine which is best for the purpose of the product they are creating. Children will explore and evaluate joining techniques – gluing, stapling, safety pinning, sewing, pinning. Look at a range of templates and patterns used to create puppets. Demonstrate examples of finishing techniques for children to practice – sewing on buttons, using a running stitch, gluing sequins and googly eyes. **3. Design product** Discuss the design brief with the pupils – who is it for and what should the product do? Children will make a simple plan before making and label the materials they will need identifying a user and a purpose. Ask children to choose their puppet pattern and use this template in their design. **4. Make product** Children will make their puppet using their design. Children will choose appropriate finishing techniques. **5. Evaluate product** Pupils will explain to someone else how they made their product and how it follows their design brief. Pupils will evaluate their product identifying strengths any changes they made against the design brief.

Key Outcomes Key Stage 2 Topic 3

	Year 3	Year 4	Year 5	Year 6
Mechanical structures - Pneumatics making a moving dragon	**1. Investigate and Evaluate** Investigate, analyse and evaluate simple mechanisms that use air to make them work e.g bicycle pump, balloon, inflatable swimming aids, foot pump for an air bed. **2. Practical skills** Construct a simple pneumatic system e.g. joining a balloon to a 5mm tube and then a washing up liquid bottle. Generate ideas and approaches on how to lift an object and explore joining and using syringes to inflate and deflate an object to create movement. **3. Market Research** Understand and gather information about the purpose of the product and who it is for. Agree a design criteria. **4. Design Product** Generate realistic and appropriate ideas following the design criteria through discussion, focussing on the needs of the user. Use annotated sketches and prototypes to develop, model and communicate ideas. **5. Make product** Order the main stages of making. Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons. Select from and use finishing techniques suitable for the product being created. **6. Evaluate Product** Evaluate own product and ideas against criteria and user needs, as they design and make.	Electrical and mechanical systems to make a light up sign	1 Evaluate and investigate existing products Children will discuss, investigate, where practical, disassemble different examples of relevant battery powered products. Children investigate examples of switches, including those which are commercially available which work in different ways e.g. push to make, push to break, toggle switch. Children are aware of dangers of mains electricity. 2 and 3 Master practical skills Recap how to make manually controlled simple circuits with batteries and different types of switches, bulbs and buzzers. Children explore how to make a range of switches using simple classroom materials e.g. card, corrugated plastic, aluminum foil, paper fasteners and paper clips. 4. Design product Develop a design brief together. Children will understand the purpose of the battery powered products that they will be designing and making and who they will be for. Children generate a range of ideas. Agree on the design criteria that will be used to guide the development and evaluation of the children's products, including safety features. Pupils use annotated sketches and cross-sectional and exploded diagram to model and communicate their ideas. 5. Make product Children test and make their product drawing on the knowledge and understanding they have learnt about electrical systems. They make a high quality product. 6. Evaluate product Children evaluate throughout the making and the final product against the intended purpose and with the intended user, drawing on the design criteria previously agreed. Suggest improvements.	Electrical systems – moving vehicle	**1 Evaluate and investigate existing products** Children identify the materials used to make the existing product e.g. remote control cars, Evaluate the product on design, appearance and use and the types of devises incorporated e.g. bulbs, switches, buzzers. Children understand who the user of the device is and it's purpose. Introduce key vocabulary. **2 and 3 Master practical skills** Children suggest electrical systems that could be used in their product - motors, switches and lights and practice methods for making secure electrical connections. Investigate sensors such as light dependent resistors switches and motors an explore how to make each component work in a circuit. Children are aware of dangers of mains electricity. Explore how to join materials to make a chassis and axel using construction kits which allow the wheels to roll freely. **4. Design product** Develop a design brief and a design specification together identifying user and purpose. Children design a product using a detailed plan, step-by step. Children draw on research and communicate ideas through annotated sketches, pictorial representations of electrical circuits and equipment needed. **5. Make product** Visit KS2 make your own motorised vehicle (tts-group.co.uk) to see how to make a motorized car. Pupils make a high quality product, applying knowledge, understanding and skills from previous lessons. Children will use a range of tools and equipment competently including saws, joining methods. 6. Evaluate product Children will critically evaluate throughout the making process and the final product, judging appearance and function, comparing it to the original design. Children will test the system to demonstrate its effectiveness for the intended user and purpose.	Food Technology - Celebrating culture and seasonality – Making a curry	1. Evaluate and investigate existing products Children will identify the difference between the appearance, texture and taste of a range of vegetable curries on the market. Identify list of ingredients and flavours used in the curries. Research selection of spices that are often used. Introduce key vocabulary. Children will explore where ingredients have come from and seasonality. **2. Food Hygiene and safety** Children will prepare the work surface and ingredients hygienically using appropriate utensils and will work safely when using heat sources. Children will explore how to safely chop vegetables using appropriate techniques. 3. Practical skills Pupils will master practical skills of following a simple recipe to make a basic curry. Children will understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). They will demonstrate a range of cooking techniques when following a simple recipe. 4. Market Research Children will understand and gather information about what a particular group or people want from a product. Pupils will taste a selection of herbs, spices and flavours commonly used in curry. 5.Design Product Pupils will use the results from their market research to design the curry. Children will use labelled diagrams and write out the recipe. (English session) 6. Make Product Pupils will follow their plan, choosing and using the correct equipment. They will use cooking techniques such **as: chopping, peeling, grating, slicing, mixing and frying.** Pupils will measure accurately and calculate ratios of ingredients to scale up or down from a recipe. They will describe how food ingredients come together. 7. Evaluate Product Pupils will refine work and techniques as work progresses, continually evaluating the recipe through tasting and considering appearance. Pupils use design criteria to evaluate product – identifying both strengths and areas for development Pupils consider the views of others, including intended user, whilst evaluating product.

Design Implementation

KS1 Intention 1 - It is our intention that pupils will be user focused designers. Considering the values, needs and preferences of their chosen specific target group.

Year 1	Year 2
• Children will be given the design criteria to discuss and will be able to think of some needs of the user – this will often be linked to their own preference. • Children will clarify ideas through class discussion to develop their design including appearance and taste.	• Children will be guided by their teacher to generate realistic and appropriate ideas to create their own design criteria through discussion, focusing on the needs of the user. • Children will begin to generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste and texture for a particular user and purpose.

Design Implementation

KS2 Intention 1 - **It is our intention that pupils will be user focused designers. Considering the values, needs and preferences of their chosen specific target group.**			
Year 3	Year 4	Year 5	Year 6
Children will begin to generate realistic and appropriate ideas and with support create their own design criteria through discussion, focusing on the needs of the user. Children will begin to generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.	Children will undertake research to understand the needs of the target audience. Children will start to generate realistic and appropriate ideas and with minimal support create their own design criteria through discussion with peers, focusing on the needs of the user.	Children will begin to investigate, analyse and evaluate a range of product s to understand the needs of the target audience. Children will generate realistic and appropriate ideas and create their own design criteria though discussion with peers, focusing on the needs of the user.	Children will investigate, analyse and evaluate a range of products to understand the needs of the target audience. Children will generate and develop innovative ideas and share and clarify these through discussion.

Design Implementation

KS1 Intention 2 - It is our intention that all our children can clearly communicate the purpose of the products they design. Defining what function their product fulfills.

Year 1	Year 2
Children will begin to use labelled diagrams to develop and communicate ideas. They will talk through the purpose of the product with an adult or a peer.	Children will use labelled diagrams to develop, model and communicate ideas. They will use appropriate information such as recipe cards, existing products to develop and communicate ideas.

Design Implementation

KS2 Intention 2 - **It is our intention that all our children can clearly communicate the purpose of the products they design. Defining what function their product fulfills.**

Year 3	Year 4	Year 5	Year 6
-Children will begin to use annotated sketches and basic prototypes to develop, model and communicate ideas. -They will use appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.	Children will generate, model and communicate realistic ideas through discussion and, as appropriate, use annotated sketches and exploded diagrams. Children will use appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.	Children will explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. Children will use words, annotated sketches and cross-sectional and exploded diagrams to communicate their ideas. They will develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, ratio of ingredients to scale up or down, resources and cost.	Children will use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, the ratio of a ingredients to scale up or down, resources and cost. Children will generate and develop innovative ideas and share and clarify these through discussion. Children will communicate ideas clearly through annotated sketches, pictorial representations, annotated sketches, cross-sectional and exploded diagrams.

Art and Design Implementation

KS1 Intention 3 -It is our intention that all pupils will design and make functional products to effectively fulfil the users needs. We want them to have a knowledge of a range of techniques, skills, tools and materials. We want them to have experiences as part of a process, to realise actual designers use a range of technologies to achieve the desired outcome. They will complete lessons that are designed to expose them to a wide range of skills and processes.

Year 1	Year 2
• Children will master practical skills of chopping low resistance food, spreading and toasting. • Discuss the importance of tying hair back, washing hands and cleaning work surfaces when working with food. • Use cutting skills and a range of joining techniques to join paper, card, wool and decorations.	• They will master practical skills of washing, chopping (of low/medium resistance foods) and grating. • Discuss the importance of tying hair back, washing hands and cleaning work surfaces and washing fruit before eating. • Children will explore and evaluate joining techniques to join paper, card and fabric by gluing, stapling, safety pinning, sewing, pinning. Children will choose and use a range of templates and patterns to create puppets. Explore and refine finishing techniques for e.g. sewing on buttons, using a running stitch, gluing sequins and googly eyes. • They will begin to communicate the most effective joining technique to fit the purpose.

Design Implementation

KS2 Intention 3 -**It is our intention that all pupils will design and make functional products to effectively fulfil the users needs. We want them to have a knowledge of a range of techniques, skills, tools and materials. We want them to have experiences as part of a process, to realise actual designe rs use a range of technologies to achieve the desired outcome. They will complete lessons that are designed to expose them to a wide range of skills and processes.**

Year 3	Year 4	Year 5	Year 6
-To practice the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques. -Learn to select and use a range of utensils and use a range of techniques to prepare ingredients hygienically (the bridge and claw technique, grating, peeling, chopping, slicing, kneading, spreading). Develop their ability to spread, cut (medium resistance foods) using a claw or fork grip. Begin to use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. -Generate and design appropriate ideas using CAD (to create nets).	- Children will be able to select from and use tools and equipment to cut, shape, join and finish with some accuracy. -To practice and gain confidence with different sewing techniques (back stitch, over stitch and running stitch). -Children will be able to accurately order the main stages of making, listing materials/ingredients, tools/utensils. To develop skills of circuit making and experiment with different materials and their properties. -To practice and develop using a range of utensils techniques to prepare ingredients hygienically (including the bridge and claw technique, grating, chopping, slicing, mixing, kneading)	-Children will be able to create step-by-step instructions/recipe, including a list of ingredients/materials, equipment/tools and utensils. If appropriate they will allocate tasks within a team. --To practice and develop using a range of utensils techniques to prepare ingredients hygienically (including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking) -To develop measuring, marking, cutting, shaping and joining skills, square section wood and card triangles. -Develop skills and techniques using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. -To develop and practice methods for making and securing electrical connections (wire strippers, twist tape, screw connections and connecting blocks)	- To develop and practice joining skills using different sewing techniques (stem stitch, chain stitch, lazy daisy stitch, satin stitch). -Children will formulate a step-by-step plan to guide making. Producing detailed lists of equipment, components, utensils and fabrics relevant to their products -To develop skills of measuring out, cutting, shaping and combining ingredients using the appropriate utensils. - Children will master practical skills of making simple models of different types of cams using precut cams made from MDF. - Children will demonstrate how to use a hand drill safely. - Pupils develop measuring, making, cutting, shaping and joining techniques using wood working tools.

Design Implementation

KS1 Intention 4 -It is our intention that all children will have opportunities to make individual design decisions. To be innovative and confident in the decisions they make, allowing them to be creative, technical and draw on knowledge from other subjects. We want children to develop their sense of innovation by taking part in engaging lessons that ignite their creativity.

Year 1	Year 2
• Children will understand and talk about how an existing product works, who it is for and how it works.	• Children will understand how an existing product works and what it is used for. They will make a drawing of an existing product stating the user and purpose and labelling the main parts.

Design Implementation

KS2 Intention 4 -**It is our intention that all children will have opportunities to make individual design decisions. To be innovative and confident in the decisions they make, allowing them to be creative, technical and draw on knowledge from other subjects. We want children to develop their sense of innovation by taking part in engaging lessons that ignite their creativity.**

Year 3	Year 4	Year 5	Year 6
-Children will begin to develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. -Generate and clarify ideas through classroom discussion. -Children investigate, analyse and evaluate familiar objects that use air to make them work. To investigate a collection of different shell structures including reverse engineering products to identify the different parts.	-Children will start to develop a variety of ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. -Generate and clarify ideas through discussion with peers and adults. Children investigate and make manually controlled simple circuits with batteries and different types of switches, bulbs and buzzers and incorporate them into their design.	-Children will begin to generate creative ideas independently after through research and discussion with peers and adults to develop a design brief and criteria for a design specification. Children investigate a variety of electrical sensors (LDRs) and a range of switches to understand how they work. (push-to-make switches, push- to-break switches, toggle switches, micro switches and reed switches.) They choose the best switch fit for purpose in their design.	-Children will confidently generate a range of innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.

Design Implementation

KS1 Intention 5 -It is our intention that all children will be able to evaluate and reflect on their designs. We want them to be able to say how their work compares to others and know their next steps in mastering skills and techniques.

Year 1	Year 2
• Children will explain to someone else how they made their product. • Children will say what they like about their product and any changes they made during the making process.	• Pupils will explain to someone else how they made their product and how it follows their design brief. • Children will identify strengths and begin to suggest ways to improve their product if they were to make it again.

Design Implementation

KS2 Intention 5 -**It is our intention that all children will be able to evaluate and reflect on their designs. We want them to be able to say how their work compares to others and know their next steps in mastering skills and techniques.**

Year 3	Year 4	Year 5	Year 6
• Children will be able to evaluate their • own products and ideas against criteria/user needs and begin to suggest improvements.	• Children will be able to evaluate their • own products and ideas against criteria and user needs, as they design and make. They will be able to suggest improvements and • acknowledge aspects that have • gone well during the project.	• Children will be able to critically • evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.	• Children will be able to evaluate the • final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.

Design Implementation

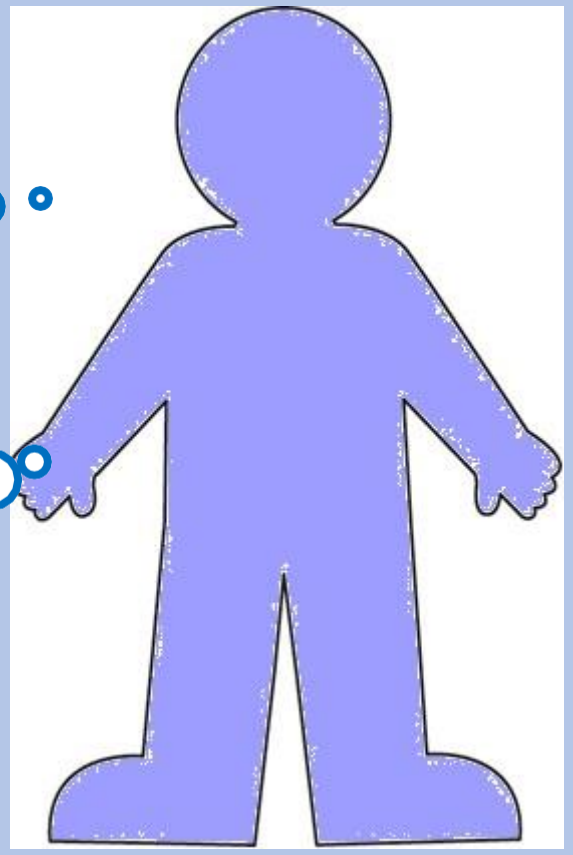
KS1 Intention 6 - It is our intention that all children will have a progressive, technically challenging, vocabulary to describe and explain their process.	
Year 1	Year 2
• Children will begin to know and use some technical vocabulary relevant to each project. • (See separate vocabulary spines).	• Children will begin to know and use some technical vocabulary relevant to each project. • (See separate vocabulary spines).

Design Implementation

KS2 Intention 6 - **It is our intention that all children will have a progressive, technically challenging, vocabulary to describe and explain their process.**			
Year 3	Year 4	Year 5	Year 6
Children will begin to know and use some technical vocabulary relevant to each project. (See separate vocabulary spines).	Children will know and begin to use technical vocabulary regularly in each project. (See separate vocabulary spines).	Children will know and use technical vocabulary regularly and appropriately during each project (See separate vocabulary spines).	Children will consistently use and apply technical vocabulary throughout each project. (See separate vocabulary spines).

Design and Technology Implementation

A great year 1 **Designer** will:



User focus.
Identify their own preferences and make ideas matching their interest.

Communicate purpose.
Make simple plans before making and label the materials they will need.

Knowledge
Use cutting skills and a range of joining techniques to join paper, card, wool and decorations.
They will master practical skills of chopping low resistance food, spreading and toasting.

Vocabulary.
Children will begin to know and use some technical vocabulary relevant to each project.

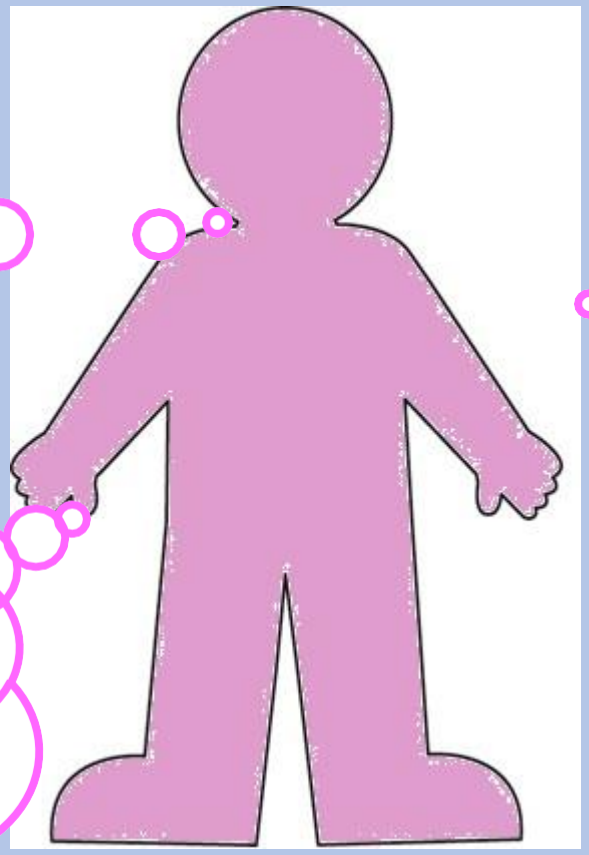
Evaluate
Children will explain to someone else how they made their product.

Children will make simple judgements of how the product met their design ideas.

Innovative
Children will say what they like about their product and any changes they made during the making process.

Design Technology Implementation

A great year 2 **Designer** will:



User focus.
Children will understand related existing products, how they work , who they are for and what they are used for.

Communicate purpose.
Children will make a drawing the product stating the user and purpose and labelling the main parts. They will make a simple plan before making and label the materials they will need identifying a user and a purpose.

Knowledge
Children will explore and evaluate joining techniques to join paper, card and fabric by gluing, stapling, safety pinning, sewing, pinning.
They will begin to communicate the most effective joining technique to fit the purpose.
They will master practical skills of washing, chopping and grating.

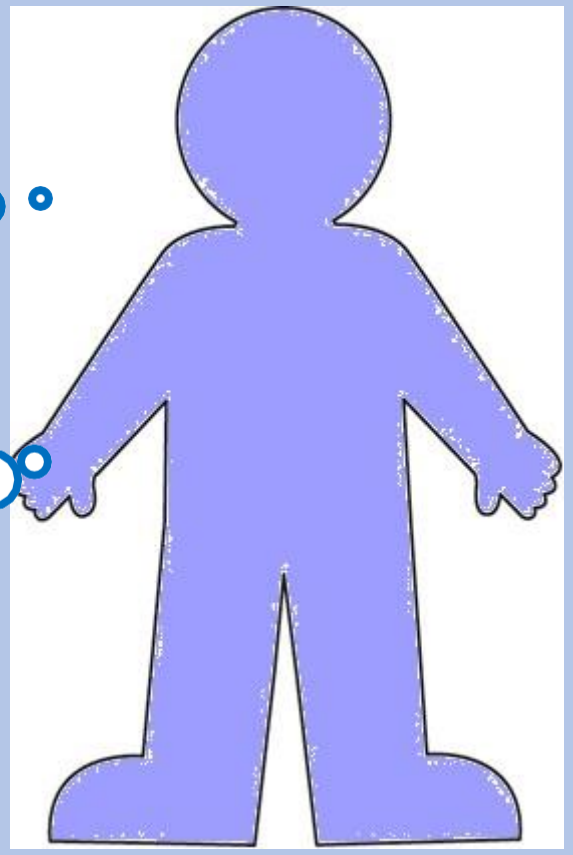
Vocabulary.
Children will know and begin to use technical vocabulary regularly in each project.

Evaluate
Pupils will explain to someone else how they made their product and how it follows their design brief.

Innovative
Pupils will evaluate their product identifying strengths any changes they would make if they were to make their product again.

Design and Technology Implementation

A great year 3 **Designer** will:



<u>User focussed.</u>
Research, test and evaluate existing products and suggests improvements.

<u>Communicate purpose.</u>
Begin to use annotated sketches and basic prototypes to develop, model and communicate ideas.

<u>Knowledge</u>
Begin to select the appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. Develop their ability to spread, cut (medium resistance foods) using a claw or fork grip.

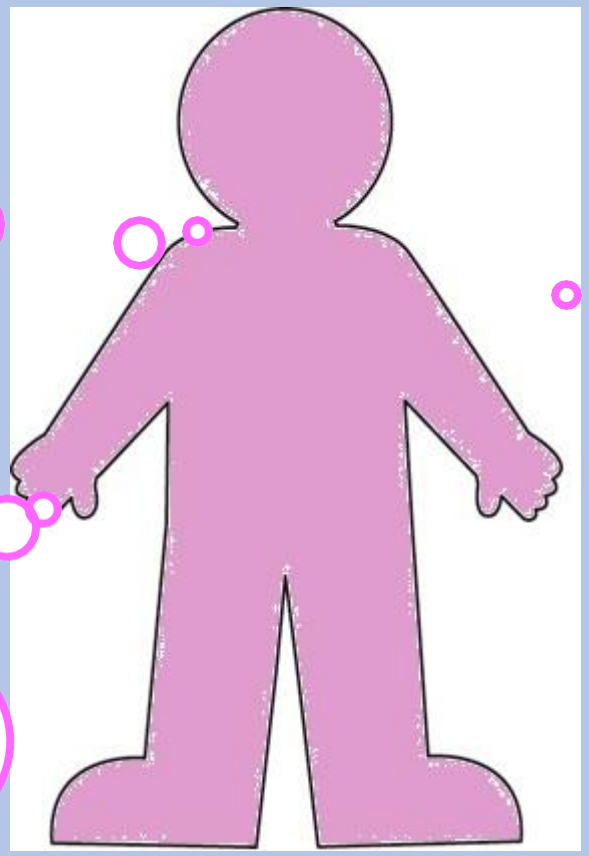
<u>Vocabulary.</u>
Children will begin to know and use some technical vocabulary relevant to each project.

<u>Evaluate</u>
Be able to evaluate their own products and ideas against criteria/user needs and begin to suggest improvements.

<u>Innovative</u>
Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.

Design Technology Implementation

A great year 4 **Designer** will:



<u>User focussed.</u>
Children will undertake research to understand the needs of the target audience.

<u>Communicate purpose.</u>
Children will generate, model and communicate realistic ideas through discussion and, as appropriate, use annotated sketches and exploded diagrams.

<u>Knowledge</u>
Be able to select from and use tools/ equipment to cut, shape, join and finish with some accuracy. Children will be able to select from and use materials, fabric and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

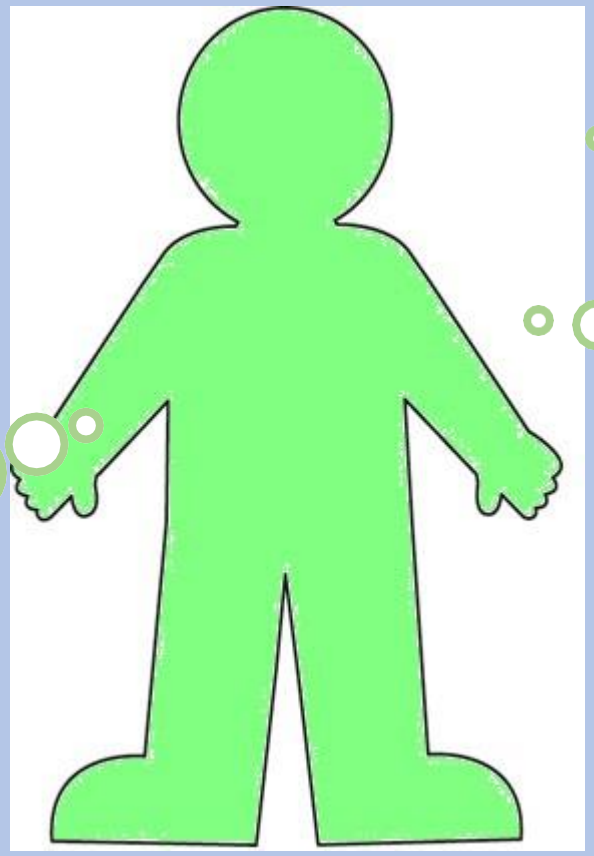
<u>Vocabulary.</u>
Children will know and begin to use technical vocabulary regularly in each project.

<u>Evaluate</u>
Children will be able to evaluate their own products and ideas against criteria and user needs, as they design and make. They will be able to suggest improvements and acknowledge aspects that have gone well during the project.

<u>Innovative</u>
Children will develop a variety of ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.
Generate and clarify ideas through discussion with peers and adults.

Design Technology Implementation

A great year 5 **Designer** will:



Use focus
Children will begin to investigate, analyse and evaluate a range of products to understand the needs of the target audience.

Communicate Purpose.
Children will explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.

Knowledge
Select from and use tools to accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.
Will be able to such **chop, peel, grate slice, mix, spread, fry and learn how to** combine ingredients to form savoury dishes. Slice higher resistance foods using bridge or claw grip. Select and use appropriate utensils and equipment accurately to measure and combine ingredients.

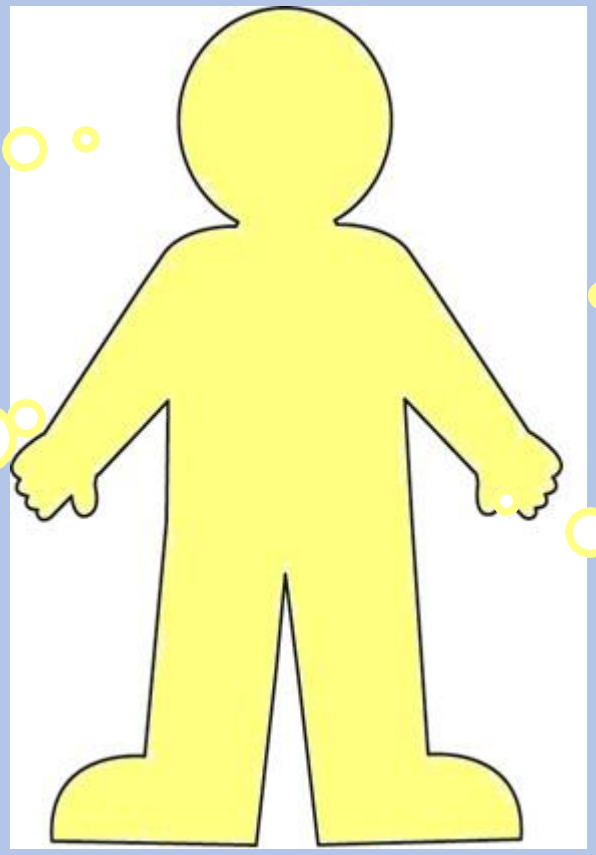
Vocabulary
Children will know and use technical vocabulary regularly and appropriately during each project

Evaluate
Children will be able to critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development.

Innovative
Begin to generate creative ideas independently after through research and discussion with peers and adults to develop a design brief and criteria for a design specification.

Design Technology Implementation

A great year 6 **Designer** will:



User focus.
Children will investigate, analyse and evaluate a range of products to understand the needs of the target audience.

Communicate purpose
Will use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost.

Knowledge
Be able to create step-by-step plans to guide making. Create detailed lists of equipment, components, utensils and fabrics relevant to their products. Select and use appropriate utensils accurately to measure and combine ingredients.
Will use cooking techniques such **as: chopping, peeling, grating, slicing, mixing and frying.**
They will make, decorate and present food products appropriately for the intended user and purpose.

Vocabulary
Consistently use and apply technical vocabulary throughout each project.

Evaluate
Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.

Innovate
Be able to confidently generate a range of innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.

Design & Technology Implementation

Master Practical Skills in Cooking

Threshold Concept:	Key Stage One	Lower Key Stage Two	Upper Key Stage Two
This concept involves developing the skills needed to make high quality products.	• Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients.	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).	• Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • Create and refine recipes, including ingredients, methods, cooking times and temperatures.

Design & Technology Implementation
Design, make, evaluate, improve

Threshold Concept:	Key Stage One	Lower Key Stage Two	Upper Key Stage Two
This concept involves developing the process of design thinking and seeing design as a process.	• Make products, refining the recipe as work progresses.	• Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the recipe through tasting and considering appearance. .	• Design the presentation with the user in mind. • Continually refine the recipe using previous experiences and knowledge of how ingredients taste. For example, add more flavour using herbs. • Ensure products have a high-quality finish, using presentation skills where appropriate.

Design & Technology Implementation

National Curriculum Key Outcomes - Designing
Key Stage 1
• design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

National Curriculum Key Outcomes - Making
Key Stage 1
• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

Design & Technology Implementation

National Curriculum Key Outcomes - Designing			
Year 3	Year 4	Year 5	Year 6
• use research and plan the design of innovative, functional, appealing products that are fit for purpose, aimed at particular people. • generate, develop, model and communicate my ideas through discussion, annotated sketches, prototypes. • investigate and analyse a range of existing products.	• use research and plan the design of innovative, functional, appealing products that are fit for purpose, aimed at particular people. • generate, develop, model and communicate my ideas through discussion, annotated sketches. • investigate and analyse a range of existing products.	• use research and plan the design of innovative, functional, appealing products that are fit for purpose, aimed at particular people. • generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. • investigate and analyse a range of existing products.	• use research and plan the design of innovative, functional, appealing products that are fit for purpose, aimed at particular people. • generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, • prototypes, pattern pieces and computer-aided design. • investigate and analyse a range of existing products.

Design & Technology Implementation

National Curriculum Key Outcomes - Making			
Year 3	Year 4	Year 5	Year 6
• - select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing, accurately. • - select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. • - apply my understanding of how to strengthen, stiffen and reinforce more complex structures. • - understand and use mechanical systems in my products e.g. gears, pulleys, cams, levers and linkages. • - understand and use electrical systems in my products e.g. series circuits incorporating switches, bulbs, buzzers and motors.	• - select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing, accurately. • - select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. • - apply my understanding of how to strengthen, stiffen and reinforce more complex structures. • - understand and use mechanical systems in my products e.g. gears, pulleys, cams, levers and linkages. • - understand and use electrical systems in my products e.g. series circuits incorporating switches, bulbs, buzzers and motors.	• -Select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing, accurately. • - select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. • - apply my understanding of how to strengthen, stiffen and reinforce more complex structures. • - understand and use mechanical systems in my products e.g. gears, pulleys, cams, levers and linkages. • - understand and use electrical systems in my products e.g. series circuits incorporating switches, bulbs, buzzers and motors.	• - select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing, accurately. • - select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. • - apply my understanding of how to strengthen, stiffen and reinforce more complex structures. • - understand and use mechanical systems in my products e.g. gears, pulleys, cams, levers and linkages. • - understand and use electrical systems in my products e.g. series circuits incorporating switches, bulbs, buzzers and motors.