Curriculum Overview

"Creativity is allowing yourself to make mistakes – Design is knowing which ones to keep."

Scott Adams

Curriculum Overview

Design and Technology

At Heathfield, we believe Design Technology is an inspiring, practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others needs, wants and values.

Aims - What are the aims of the National Curriculum?

- To develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.
- To build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users.
- To critique, evaluate and test their ideas and products and the work of others.
- To understand and apply the principles of nutrition and learn how to cook.

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Implementation - how do we achieve our aims?

KS1

DESIGN

- 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.

MAKE

- 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.

EVALUATE

- Explore and evaluate a range of existing products.
- Evaluate their ideas and products against design criteria.

TECHNICAL KNOWLEDGE

- 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.

COOKING AND NUTRITION

- Use the basic principles of a healthy and varied diet to prepare dishes.
- Understand where food comes from.

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Implementation - how do we achieve our aims?

KS2

DESIGN

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

MAKE

- Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.
- Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.

EVALUATE

- Investigate and analyse a range of existing products.
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
- Understand how key events and individuals in design and technology have helped shape the world.

TECHNICAL KNOWLEDGE

- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
- Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].
- Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.

COOKING AND NUTRITION

- Understand and apply the principles of a healthy and varied diet.
- Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.
- Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

KEY SKILLS PROGRESSION

Design and Technology

DT: Overview of Key Skills

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plan and communicate ideas Draw on their own experience to help generate ideas. Suggest ideas and explain what they are going to do. Identify a target group for what they intend to design and make. Model their ideas in card and paper. Develop their design ideas applying findings from their research. **Make (technical knowledge)** Make their design using appropriate techniques. With help, measure, mark out, cut and shape a range of materials. Use tools safely. Assemble, join and combine materials and components together using a variety of temporary methods, e.g. glue or masking tape. Select and use appropriate fruit and vegetables, processes and tools. Use basic food handling hygiene practices ad personal hygiene. Use simple finishing techniques to improve the appearance of their product. **Evaluate** Evaluate their product by discussing how well it works in relation to the purpose. Evaluate their products as they are developed identifying strengths and possible changes they may make. Evaluate their product by asking questions about what they have made and how they have gone about it.	**Plan and communicate ideas** Generate ideas by drawing on their own and other people's experiences . Develop their design ideas through discussion, Observation, drawing and modeling. Identify a purpose for what they intend to design and make . Identify simple design criteria. Making simple drawings and label parts . **Make (technical knowledge)** Begin to select tools and materials use appropriate vocabulary to describe and name them. Measure, cut and score with some accuracy. Use hand tools safely and appropriately. Assemble, join and combine materials in order to make a product. Cut, shape and join fabric to make a simple product. Choose and use appropriate finishing techniques to improve the look of a product. **Evaluate** Evaluate against their design criteria. Evaluate their products as they are developed identifying strengths and modifications. Talk about their ideas saying what they like and dislike about them.	**Plan and communicate ideas** Generate ideas for an item, considering its purpose and the user/s. Identify a purpose and establish criteria or a successful product. Plan the order of their own work before starting. Explore, develop and communicate design proposals by modelling ideas. Make drawings with labels when designing. **Make (technical knowledge)** Select tools and techniques for making their product. Measure, mark out, cut, score and assemble components with more accuracy. Work safely and accurately with a range of simple tools. Think about their ideas as they make progress and be willing to change things to improve their work. Measure, tape or pin, cut and join fabric with some accuracy. Demonstrate hygienic food preparation and storage. Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT. **Evaluate** Evaluate their product against the original design criteria. Disassemble and evaluate familiar products.	**Plan and communicate ideas** Generate ideas, considering the purposes for which they are designing. Make labelled drawings from differing views showing specific features. Develop a clear idea of what has to be done, planning how to use materials , equipment and processes, and suggesting alternative methods of making if the first attempts fail. Evaluate product and identify criteria that can be used for their own designs. **Make (technical knowledge)** Select appropriate tools and techniques for making their product. Measure, mark out, cut and shape a range of materials using appropriate tools, equipment and techniques. Join and combine materials and components accurately in temporary and permanent ways. Sew using a range of different stitches, weave and knit. Measure, tape or pin, cut and join fabric with some accuracy. Use simple graphical communication techniques. **Evaluate** Evaluate their work both during and at the end of the assignment. Evaluate their products carrying out appropriate tests.	**Plan and communicate ideas** Generate ideas through brainstorming and identify a purpose for their product. Communicate ideas in different ways, e.g. drawing to scale, cross sectional drawings. Draw up a specification for their design. Develop clear ideas of that has to be done planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail. Use results of investigations Information sources including ICT when developing design ideas. **Make (technical knowledge)** Select appropriate materials tools and techniques. Measure and mark out accurately. Use skills in using different tools and equipment safely and accurately. Weigh and measure accurately (time, dry ingredients, liquids) Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens. Cut and join with accuracy to ensure a good-quality finish to the product. **Evaluate** Evaluate a product against the original design specification. Evaluate own product and others and gain evaluation from others on product.	**Plan and communicate ideas** Communicate their ideas though detailed labelled drawings, annotated sketches, exploded diagrams, Sketch or model alternative ideas. Develop a design specification. Explore develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways e.g. prototypes and pattern pieces. Plan the order of their work choosing appropriate materials tools and techniques. Consider costs and availability of materials. **Make (technical knowledge)** Select appropriate tools, materials, components and techniques. Assemble components to make working models. Use tools safely and accurately. Construct products using permanent joining techniques Assemble components and make working models. Use tools safely and accurately. Construct products using permanent joining techniques. Make modifications as they go along. Pin, sew and stich material together to create a product. Achieve a quality product. **Evaluate** Evaluate their products identifying strengths and areas for development and carrying out appropriate tests. Evaluate against their original criteria and suggest ways that their product could be improved.

Curriculum Overview

Design and Technology

Practical knowledge: DT elements

At the heart of the design and technology curriculum are the key elements of DT that underpin the units undertaken in each year group. The elements are explored simply in EYFS. The EYFS framework specifically mentions children must show good control in large and small movements whilst moving confidently in a range of ways. They should handle equipment and tools effectively, including pencils for writing.

Practical knowledge: the three strands

In KS1 & 2, design technology is taught through three strands: Plan and Communicate Ideas, Make and Evaluate. These strands build progressively, year on year, by carefully considering the deepening of the formal elements of DT. Each strand gives children a breadth of exploration allowing children to build on prior knowledge.

Strong Vocabulary Development

Across each unit, key vocabulary is taught and used by staff and children. This development of vocabulary will allow children to discuss DT confidently.

Strong Foundations

DT is an essential part of learning in Reception. It is incorporated in everyday learning, for example through development of fine motor and building skills. The design aspects of the children's work relate to the objectives set out in the EYFS Framework. We ensure that the key foundational knowledge required for our KS1 DT curriculum is fed into our Reception environment and learning activities. Children are introduced to a range of media which they can explore and play with. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Knowledge-rich teaching

Our knowledge-based curriculum helps to focus learning and ensure a knowledge-rich education. Through focusing on the formal DT elements, children encounter a broad range of practical knowledge. These elements are taught to be remembered, stored in long-term memory and built on throughout the key stages. Throughout KS1 and KS2, these areas are explicitly taught, revisited and developed through Flashback 4 and direct teaching. Teachers model these to the children so that children are equipped when designing, making and evaluating their own work. We want children to leave our school being able to design and make products that solve real and relevant problems.

Curriculum Overview

Design Technology

Using Sketchbooks

In KS1 and KS2, children use sketchbooks in design and technology lessons. Sketchbooks are used to collect and comment on designs and products from key designers; collect ideas for own designs; and develop a record of skills linked to the key DT elements taught, capturing the rich designing process.

Progression in Sketchbook Use

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
• Describe their designs verbally (pieces collected separately)	• Describe their designs in their sketchbooks verbally • Begin to use designs to produce a final piece.	• Use written annotations to make comments about their work, including the elements of DT taught • Suggest improvements for their designs, verbally • Use designs to produce a final piece.	• Use written annotations to make comments about and suggest improvements to their own work through self-evaluation • Identify the purpose of their work verbally • Use sketchbooks to express feelings about their designs.	• Use sketchbooks to adapt and improve their ideas and incorporate previous elements of DT taught • Identify the purpose of their work in their sketchbooks.	• Use feedback to make amendments and improvement to their design. • Use their sketchbooks to compare and discuss ideas with others • Keep notes in their sketchbooks as to how they might develop their work further (on their practice pages, designs and their final pieces)	• Adapt and refine their work to reflect its meaning and purpose, keeping notes and annotations in their sketchbook through the practise pages and on final pieces • Make detailed notes and write quotes explaining their design. • Comment carefully on the methods they use, and make decisions about the effectiveness of their methods.

Curriculum Overview

Design Technology

A Progressive Curriculum

In this school, DT is taught discretely – it is not the same as Art, or a way to deliver other areas of the curriculum. It is a valued and discrete discipline which to master.

The progressive curriculum is developed into strands, plan and communicate ideas, make and evaluate. Our curriculum affords children the opportunity for repeated practice of techniques over time, by using different media, and vice versa, which develops children's fluency and automaticity in DT. Children are also expected to apply their learning from earlier units.

Children cannot produce expert outcomes without being taught the component knowledge first. Units of work build children's knowledge carefully, so that they have the techniques, experience of using basic tools and understanding of the design process to create products with a purpose. Being exposed to several examples, from a range of designers is key, so children become immersed in innovation and design and, creating purposeful and appealing products for themselves and for others that solve real and relevant problems within a variety of contexts.

Units of work provide opportunity for learning to be repeated and built upon.

Clearly-Structured Units of Work

Design Technology lessons follow the following structure to develop essential knowledge and allow children to establish themselves as artists:

Exploring key designers, products or texts that will inspire the unit, evaluating and discussing their works and making comparisons.

Designing and producing ideas for their own products, inspired by key designers, products or texts.

Making final products based on their design criteria

Evaluating own work and the work of others.

Critically Evaluating Work

In EYFS, children talk about the designs and products they have made. In KS1, this develops to commenting on how their designs and products could be improved. In KS2, children evaluate their own and each other's products and designs (via post-its), commenting on effectiveness. Children may evaluate work within partners or groups. This encourages children to think critically about the design process and to respond appropriately to feedback. In UKS2, children will have a greater understanding that the quality of the final product is based on the initial design and the design process.

Curriculum Overview

Design Technology

Making Progress

In our curriculum, to make good progress in DT means that children get better at the design process over time. They develop a mastery of the formal elements because they are taught progressively and deliberately. Children learn knowledge and make connections, developing their schema by building on their prior learning and moving from novices to experts.

Children can then:

- Use creativity and innovation to design purposeful and appealing products.
- Use a range of tools confidently and skilfully.
- Articulate their ideas in a variety of formats.
- Evaluate their work against a design criteria.
- Develop a critical understanding of the impact of design.
- Have fun, be challenged, work with others and learn in a practical context.

Assessment

We assess DT through different ways: as we teach, in order to intervene and improve outcomes, ensuring technical control, automaticity and proficiency; to check and revisit prior knowledge of what children know, can do and remember of taught content through 'Flashback 4' and by using a 'show me, tell me' approach, for summative outcomes, including sketchbook work and products. This holistic view allows teachers to assess whether the child is working at the expected standard each term, learning the planned curriculum and keeping pace with it. Verbal feedback is used as the primary form of feedback, however work is marked where appropriate.

Ambition for ALL

Ensuring all children achieve and succeed in our Design Technology curriculum is vital. As such, we carefully consider all children's needs and barriers, be those SEND needs which require addressing or particular talents and strengths that require nurturing. We follow the Lingfield Education Trust 'Curriculum for ALL' guidance to ensure that all children can show the best version of themselves through our curriculum.

Ambition for ALL | Special Educational Needs

In order to support children with SEND in meeting the ambitious curricular goals, we apply a range of specific support, adaptation and modification methods, specific to the child and their needs. These could include:

Cognition & Learning Needs	• Pre-teaching of pertinent vocabulary will support learning, as well as having clear displays and/or points of reference for the children to remember and use vocabulary correctly. • Use of additional adult when possible • Task targets/clear success criteria • Visual stimuli/hooks- turn abstract in to concrete • Support when using tools and equipment (saws, oven etc.) • An appreciation that this might be the area where the child excels
Communication & Interaction Needs	• Pre-teaching of pertinent vocabulary will support learning, as well as having clear displays and/or points of reference for the children to remember and use vocabulary correctly. • Pre-teaching vocabulary, vocabulary maps/word banks • Use of visuals to support understanding of key concepts • Use of own communication methods / aids – such as PECS, Makaton, writing, drawing
Sensory / Physical Needs	• Awareness of sensory needs, modification of learning environment (light, sound, seating) • Modifying visual resources e.g. pictures, text • Support when using tools and equipment (saws, oven etc.) • Modified tools and equipment depending on need (scissors, cutting tools etc.)
SEMH	• Dynamic risk assessment implemented for the use of specific DT resources • Careful supervision when using more complex equipment that poses a risk to safety

Ambition for ALL | The Most Able

Some children show skill, knowledge or aptitude above that which is typically expected for their subject, for their age. It is important that these children are afforded the opportunity to shine.

Indicators that children may be working above their age related expectations	• Pupils use their knowledge and understanding of DT to show greater complexity, research, observation, originality, perception or creativity • Pupils display a higher level of technical skill with a broad range of tools and media and think of innovative ways to use this knowledge to enhance creativity and develop a style of their own • Pupils are more analytical when evaluating their work and work independently to assess and improve their products • Pupils are inspired by technology through a greater a knowledge of artists, designers and other professionals in their field offering personal opinions and preferences

CURRICULUM OVERVIEW

Design Technology

IMPACT - HOW WILL WE KNOW WE ACHIEVED OUR AIMS?

Children know more and remember more, developing skills that are transferable across the curriculum such as critical thinking.

Children can discuss key designers/designs and how these have inspired them and shaped the world we live in.

Children understand that DT is needs to be purposeful and appealing and they produce work that demonstrates how they have drawn inspiration from key designers yet expressed themselves in their own way.

Children develop competence in applying the knowledge they have learnt, which is evident in their work and through discussion.

Children's work is proudly displayed in school and children are keen to share their work with others. Children can talk about their products and explain their learning.

Children think critically about their work and the work of others by evaluating their work.

LONG TERM PLAN

Design Technology

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	Children show good control and coordination in large and small movements. They move confidently in a range of ways, safely negotiating space. They handle equipment and tools effectively, including pencils for writing. Expressive arts and design: Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Expressive arts and design: Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.					
Year 1		**Moving Pictures** The Gruffalo		**Freestanding Structure** Making a toy box		**Food Tech** Summer Fruit Smoothies
Year 2		**Great Fire of London** Wheels and Axels Making a Vehicle		**Freestanding Structure** Kenya		**Templates 'n' Joining** Recycled Materials
Year 3		**Moving Pictures** Stone Age: Levers and linkages		**Pneumatics:** Moving animals in the rainforest		**The Greeks** 2D shape to 3D product Making a Cushion
Year 4		**The Romans** 2D shape to a 3D product		**Food Tech** Spanish Tapas		**Simple Circuits and Switches**
Year 5		**Cams** Anglo Saxons		**Frame Structures** Bridges		**Pulleys/Gears** Invaders and Settlers – Vikings
Year 6		**Food Tech** Brazilian Street Food		**More Complex Switches** Enemy Alarm		**Amazing Americas** Combining Different fabric shapes: Bags

MEDIUM TERM PLAN

Design Technology

Autumn 2
Year 1

	Topic: The Gruffalo: Sliders and levers/Moving Pictures	Term: Autumn	Year: 1

Foundations of previous learning:

Early experiences of working with paper and card to make simple flaps and hinges.

- Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through drawings and mock-ups with card and paper. **Making** • Plan by suggesting what to do next. • Select and use tools, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating. **Evaluating** • Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.	To be able to design and create a mock-up. To be able to experiment with levers and sliders. To be able to cut, shape and join paper and card. To use simple finishing techniques. **Assessment of Skills** I can design a lever and make a mock-up for a book. I can cut, shapes and join paper and card. I can use a simple finishing technique in my work.	• Explore objects which use sliders and levers e.g. collection of books and everyday products that have moving parts, • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project. Introduce and develop vocabulary. **Assessment of Knowledge** Which way do levers/sliders move? Who is the audience for a moving picture book? Why? How can you get the mechanism to move smoothly? Which part of the mechanism is the pivot?	slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function

MEDIUM TERM PLAN

Design Technology

Spring 2
Year 1

	Topic: Toys: Freestanding Structures box for a toy	Term: Spring	Year: 1

Foundations of previous learning:

Experience of using construction kits to build walls, towers and frameworks.

- Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.
- Experience of different methods of joining card and paper.

Unit Learning

Objective - Coverage	Skills	Knowledge	Vocabulary	
Designing • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings. **Making** • Plan by suggesting what to do next. • Select and use tools, skills and techniques, explaining their choices. • Select new and reclaimed materials and construction kits to build their structures. • Use simple finishing techniques suitable for the structure they are creating. **Evaluating** • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. **Technical knowledge and understanding** • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project.	Choose appropriate materials for the design. Use equipment appropriately and safely. Measure, mark out, cut, shape and join materials. Join materials effectively. Create a plan. Make a box using cutting & sticking techniques. Position bricks and others construction materials to best effect. **Assessment of Skills** I can design a box with the right material. I can make a box the correct size for the toy. I can use equipment correctly and safely to help make the box. I can create a plan and follow it to make the box.	Know how to make freestanding structures stronger, stiffer and more stable. Know how to join materials effectively so they are strong and secure. Know how to finish product off to look neater. Know and use technical vocabulary relevant to the project. Know how to use interlocking bricks effectively so they don't fall when pressure is exerted. **Assessment of Knowledge** Give some examples of a free standing structure. What are the best materials to use to make a box? How can you make sure your box is strong.	cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function	Hard Soft Cuddly Shiny Wood Metal Fabric Large Small Pull along Wind up Joining Glue Tape String Design Decorate Evaluate Stiff Stable shaping

MEDIUM TERM PLAN

Design Technology

Summer 2
Year 1

	Topic: Summer Fruit Smoothie	Term: Summer	Year: 1

Foundations of previous learning:

Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.

- Experience of cutting soft fruit and vegetables using appropriate utensils.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Design appealing products for a particular user based on simple design criteria. • Generate initial ideas and design criteria through investigating a variety of fruit. • Communicate these ideas through talk and drawings. **Making** Use simple utensils and equipment to e.g. peel, cut, slice, squeeze and chop safely. • Select from a range of fruit according to their characteristics e.g. colour, texture and taste to create a chosen product. **Evaluating** • Taste and evaluate a range of fruit and fruit smoothies to determine the intended user's preferences. • Evaluate ideas and finished products against design criteria, including intended user and purpose. **Technical knowledge and understanding** • Understand where a range of fruit comes from e.g. farmed or grown at home. • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit is part of *The Eatwell plate*. • Know and use technical and sensory vocabulary relevant to the project.	Use simple utensils and equipment to e.g. peel, cut, slice, squeeze and chop safely. • Select from a range of fruit and according to their characteristics e.g. colour, texture and taste to create a chosen product.	Understand where a range of fruit comes from e.g. farmed or grown at home. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit is part of *The Eatwell plate*. Know essential to follow food hygiene practices when handling food. Know what order to carry out tasks. Know that some people can't eat certain foods and it is important to be aware of this. Know and use technical and sensory vocabulary relevant to the project.	fruit names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria
	Assessment of Skills	**Assessment of Knowledge**	
	I can use utensils to help prepare and make food. Such as; knife, juicer, peeler. I can select a piece of food according to their characteristic.	What should we do before preparing food? What equipment should we use to juice an orange? How do you make a fruit smoothie? How can you describe strawberry?	

MEDIUM TERM PLAN

Design Technology

Autumn 2
Year 2

	Topic: The Great Fire of London: Wheels and Axles	Term: Autumn	Year: 2

Foundations of previous learning:

Assembled vehicles with moving wheels using construction kits.

- Explore moving vehicles through play.
- Gained some experience of designing, making and evaluating products for a specified user and purpose.
- Developed some cutting, joining and finishing skills with card.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through drawings and mock-ups. **Making** • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. **Evaluating** • Explore and evaluate a range of products with wheels and axles. • Evaluate their ideas throughout and their products against original criteria.	Fix components together correctly. Measure axle to fit the chassis. Explores use of different axle holders in order to select preferred choice. Create a detailed, labelled plan. Cut dowel using a saw.	• Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project.	vehicle, wheel, axle axle holder, chassis body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional
	Assessment of Skills	**Assessment of Knowledge**	
	Axle fits the chassis Demonstrates can hold saw correctly and uses a vice to hold it steady. Components fit together ensuring the axle moves efficiently within the chassis.	Labels all parts of the mechanism correctly. Can explain what fixed and free moving axles are. Can explain what all parts do	

MEDIUM TERM PLAN

Design Technology

Spring 2
Year 2

	Topic: Kenya : Freestanding Structures	Term: Spring	Year: 2

Foundations of previous learning:

- Experience of using construction kits to build walls, towers and frameworks.
- Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.
- Experience of different methods of joining card and paper.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate ideas based on simple design criteria and their own experiences, explaining what they could make. • Develop, model and communicate their ideas through talking, mock-ups and drawings. **Making** • Plan by suggesting what to do next. • Select and use tools, skills and techniques, explaining their choices. • Select new and reclaimed materials and construction kits to build their structures. • Use simple finishing techniques suitable for the structure they are creating. **Evaluating** • Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. • Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.	Manipulate a variety of construction kits to create models. Measure and cut different materials to size. Create a plan. Select appropriate materials. Know how to join materials to ensure strength and stability. Fold materials in different ways to create strength and stability. **Assessment of Skills** Attach different components together to make a model. Pieces fit together well and are the correct size. Can fold materials to make them stronger and more stable. Select the correct product to fix components together.	Know what a structure is and what elements make it strong and stable. Know which materials make a strong structure. Know how to make freestanding structures stronger, stiffer and more stable. Know and use technical vocabulary relevant to the project. **Assessment of Knowledge** Give examples of structures. Identify materials to make a structure. Show how to bend and fold card to make it stronger, load bearing and easier to fasten to other components. Demonstrate different joining techniques: glue, tape, fasten.	cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function

MEDIUM TERM PLAN

Design Technology

Summer 2
Year 2

	Topic: Textiles – Templates and Joining, Making a beach bag	Term: Summer	Year: 2

Foundations of previous learning:

- Explored and used different fabrics.
- Cut and joined fabrics with simple techniques.
- Thought about the user and purpose of products.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. **Making** • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics. **Evaluating** • Explore and evaluate a range of existing textile products relevant to the project being undertaken. • Evaluate their ideas throughout and their final products against original design criteria.	Use a simple pattern Pin, or tape template to the material. Measure and cut materials to size Thread a needle Join fabric using running stitch, stapling, lacing or gluing Use finishing techniques to improve product. **Assessment of Skills** Fabric is cut effectively Pieces fit together well and are the correct size Can thread a needle Can demonstrate running stitch or other effective means of fixing fabric together. Can demonstrate an example of a finishing technique.	• Understand how simple 3-D textile products are made, using a template to create two identical shapes. • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project. **Assessment of Knowledge** Can you identify the properties that make it a suitable fabric to use? Can you identify different ways of joining the fabric? How can I make sure the product is the same size each time I make it?	names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function

MEDIUM TERM PLAN

Design Technology

Autumn 2
Year 3

	Topic: The Stone Age: Levers & Linkages	Term: Autumn	Year: 3

Foundations of previous learning:

- Explored and used mechanisms such as flaps, sliders and levers.
- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. **Making** • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. • Select from and use finishing techniques suitable for the product they are creating. **Evaluating** • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make.	Identify: the lever and the linkage, input and output, fixed pivot and loose pivot. Can use annotated sketches and prototypes to develop model and communicate ideas Can order of the main stages of making Can select from and use appropriate tools with some accuracy to cut, shape and join paper and card Can select from and use finishing techniques suitable for the product they are creating Can investigate and analyse books and where available, other products with lever and linkage mechanisms Can evaluate their own products and ideas against criteria and user needs as they design and make	Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief
	Assessment of Skills	**Assessment of Knowledge**	
	Can use annotated sketches and prototypes to develop model and communicate ideas Can select from and use appropriate tools with some accuracy to cut, shape and join paper and card Can evaluate their own products and ideas against criteria and user needs, as they design and make	What kind of movement would I see using a lever and linkage mechanism? Distinguish between fixed and loose pivots. Explain what the input and output parts of the mechanism do.	

MEDIUM TERM PLAN

Design Technology

Spring 2
Year 3

	Topic: Kenya Rain Forest: Moving Animals – pneumatics	Term: Spring	Year: 3

Foundations of previous learning:

Explored simple mechanisms, such as sliders and levers, and simple structures.

- Learnt how materials can be joined to allow movement.
- Joined and combined materials using simple tools and techniques.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. **Making** • 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 they are creating. **Evaluating** • Investigate and analyse books, videos and products with pneumatic mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make	Can use annotated sketches and prototypes to develop model and communicate ideas Can order of the main stages of making Can select and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons Can select from and use finishing techniques suitable for the product they are creating Can investigate and analyse books, videos and products with pneumatic mechanisms Can evaluate their own products and ideas against criteria and user needs, as they design and make	Understand and use pneumatic mechanisms. Know and use technical vocabulary relevant to the project. **Designer: James Dyson**	Components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight linear, rotary, oscillating, reciprocating user, purpose, function, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate
	Assessment of Skills	**Assessment of Knowledge**	
	Can use annotated sketches and prototypes to develop model and communicate ideas Can select and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons Can evaluate their own products and ideas against criteria and user needs, as they design and make	What can I use to create a pneumatic system? What is causing the object move? How can I make an object move forwards and backwards/up and down?	

MEDIUM TERM PLAN

Design Technology

Summer 2
Year 3

	Topic: Greece: Making a cushion	Term: Summer	Year: 3

Foundations of previous learning:

Have joined fabric in simple ways by gluing and stitching. Have used simple patterns and templates for marking out. Have evaluated a range of textile products.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. **Making** • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. **Evaluating** • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric.	Can generate realistic ideas and design criteria fit for user. Can produce annotated sketches, prototypes, final product sketches and pattern pieces. Can plan the main stages of making Can select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing Can select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern Can investigate a range of 3-D textile products relevant to the project Can test the product against the original design criteria and the intended user Can take into account others' views Can understand how key event/individual has influenced the development of the chosen product and/or fabric	Know which fabrics are suitable for the product. Know how to strengthen, stiffen and reinforce existing fabrics. Understand how to securely join two pieces of fabric together. Know which technique makes the strongest seam. Understand the need for patterns and seam allowances. Plan the main stages of making e.g. using a flowchart or storyboard. Know how to assemble effectively using good finishing techniques. • Know and use technical vocabulary relevant to the project. **Designer: Terence Conran** History of cushions as being a symbol of wealth, now very fashionable and use of cushions outside become more prevalent.	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces
	Assessment of Skills	**Assessment of Knowledge**	
	Can produce annotated sketches, prototypes, final product sketches and pattern pieces Can select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing Can select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern	Can you name different stitches and explain what they look like? What is a seam allowance and is it important? What does applique mean and when would I use it?	

MEDIUM TERM PLAN

Design Technology

Autumn 2
Year 4

	Topic: Romans: Making a mosaic blanket	Term: Autumn	Year: 4

Foundations of previous learning:

Have joined fabric in simple ways by gluing and stitching. Have used simple patterns and templates for marking out. Have evaluated a range of textile products.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. **Making** • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. **Evaluating** • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric.	Can generate realistic ideas and design criteria fit for user. Can produce annotated sketches, prototypes, final product sketches and pattern pieces: Can plan the main stages of making Can select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing Can select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern Can investigate a range of 3-D textile products relevant to the project Can test the product against the original design criteria and the intended user Can take into account others' views Can understand how key event/individual has influenced the development of the chosen product and/or fabric	Know which fabrics are suitable for the product. Know how to strengthen, stiffen and reinforce existing fabrics. Understand how to securely join two pieces of fabric together. Know which technique makes the strongest seam. Understand the need for patterns and seam allowances. Plan the main stages of making e.g. using a flowchart or storyboard. Know how to assemble effectively using good finishing techniques. • Know and use technical vocabulary relevant to the project. **Designer: Terence Conran** History of throws and blankets as being a symbol of wealth, now very fashionable and use of throws/blankets outside become more prevalent.	fabric, names of fabrics, fastening, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces
	Assessment of Skills	**Assessment of Knowledge**	
	Can produce annotated sketches, prototypes, final product sketches and pattern pieces Can select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing Can select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern	Can you name different stitches and explain what they look like? What is a seam allowance and is it important? What does applique mean and when would I use it?	

MEDIUM TERM PLAN

Design Technology

Spring 2
Year 4

	Topic: Spain	Term: Spring	Year: 4

Foundations of previous learning:

Know some ways to prepare ingredients safely and hygienically. Have some basic knowledge and understanding about healthy eating and *The Eatwell plate*.

- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • 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. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. **Making** • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. **Evaluating** • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.	Can 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 Can use annotated sketches and appropriate information and communication technology, such as web based recipes, to develop and communicate ideas Can use correct vocabulary to show understanding: Utensils, hygienic, edible, processed, seasonal, harvested, savoury, moist, greasy, annotated sketch Can order of the main stages of a recipe, listing ingredients, utensils and equipment Can select and use appropriate utensils and equipment to prepare and combine ingredients Can select from a range of ingredients to make appropriate food products, thinking about sensory characteristics Can carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs Can evaluate the ongoing work and the final product with reference to the design criteria and the views of others	Know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product and whether they are grown, reared or caught. Know and use relevant technical and sensory vocabulary appropriately. Know what basic food hygiene practices should be employed when handling and preparing food. Know the main stages in making the food product, before preparing/cooking it, including the ingredients and utensils they will need. Know how to adjust seasoning to alter flavour. Know if safe for intended user. Know how to create an appealing product. **Chef – Jamie Oliver**	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations
	Assessment of Skills	**Assessment of Knowledge**	
	Can use annotated sketches and appropriate information and communication technology, such as web based recipes, to develop and communicate ideas Can select from a range of ingredients to make appropriate food products, thinking about sensory characteristics Can carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs	What preparation should I do when making food? Which utensils will I need and what will they do to the food? What fresh and/or processed ingredients are appropriate for the product, are grown, reared or caught? What can I do to make the food more attractive?	

MEDIUM TERM PLAN

Design Technology

Summer 2
Year 4

	Topic: Electrical systems: simple circuits and switches.	Term: Summer	Year: 4

Foundations of previous learning:

- constructed a simple series electrical circuit in science using bulbs, switches and buzzers.

Cut and joined a variety of construction materials such as wood, card, plastic reclaimed materials and glue.

Unit Learning

NC Objective - Coverage

Designing

- Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.
- Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

Making

- Order the main stages of making.
- Select from and use tools and equipment to cut, shape, join and finish with some accuracy.
- Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

Evaluating

- Investigate and analyse a range of existing battery-powered products.
- Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.

Skills

Can gather information about the needs and wants and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups

Can generate, develop, model and communicate realistic ideas through discussion and as appropriate, annotated sketches, cross-sectional and exploded diagrams

Can use correct vocabulary to show understanding: Series circuit, fault, connection, toggle switch, push to make switch, push to break switch, battery, insulator, conductor

Can order of the main stages of making

Can select from and use appropriate tools and equipment to cut, shape, join and finish with accuracy

Can select from and use materials and components according to their functional properties and aesthetic qualities

Can investigate and analyse a range of existing battery powered products

Can evaluate their own ideas and products against their own design criteria and identify the strengths and areas for improvement in their work

Knowledge

Know how to make manually controlled simple series circuits with batteries and different types of switches, bulbs and buzzers.

Know which components are input and which are input devices: switch and which are output devices: bulb, buzzer.

Know how to find a fault in a circuit.

Know how to make a variety of switches which operate in different ways.

Know how to avoid make short circuits.

Record ideas using annotated sketches, cross-sectional and exploded diagrams.

Know the main stages in making and testing.

Vocabulary

Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip.

Control, program, system, input device, output device.

User, purpose, function, prototype, design criteria, innovative, appealing, design brief.

Assessment of Skills

Can generate, develop, model and communicate realistic ideas through discussion and as appropriate, annotated sketches, cross-sectional and exploded diagrams

Can select from and use appropriate tools and equipment to cut, shape, join and finish with accuracy

Can investigate and analyse a range of existing battery powered products

Assessment of Knowledge

What components are needed to make a circuit?

Explain what the different type of switches are and which one would be best for a torch.

What would you check if your product didn't work?

MEDIUM TERM PLAN

Design Technology

Autumn 2
Year 5

	Topic: Cams – Anglo Saxons	Term: Autumn	Year: 5

Foundations of previous learning:
Experience of axles, axle holders and wheels that are fixed or free moving.
Basic understanding of different types of movement.
Experience of cutting and joining techniques with a range of materials.
An understanding of how to strengthen and stiffen structures.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. **Making** • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project.	Can generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web based resources Can develop a simple design specification to guide their thinking, communicate ideas through discussion and drawings. Can use correct vocabulary to show understanding: Cam, snail cam, off-centre cam, peg cam, pear shaped cam, follower, axle, shaft, crank handle, housing framework Can produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team Can select and use a range of tools and equipment to make products that are accurately assembled and well finished Can use a hand drill safely to make an off-centre cam. Can position it accurately in a housing. Can measure, mark, cut, shape and join using appropriate tools. Can compare the final product to the original design specification Can test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose Can consider the views of others to improve their work	• Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. Know and use technical vocabulary relevant to the design brief Know how to communicate ideas in a variety of ways and indicate on drawing where design decisions have been made. Know how to organise step by step plan and list tools needed in the process and when.	Cam, snail cam, off centre cam, peg cam, pear shaped cam Follower, axle, shaft, crank, handle, housing, framework. Rotation, rotary motion, oscillating motion, reciprocating motion Annotated sketches, exploded diagrams mechanical system, input movement, process, output movement design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief.

	Assessment of Skills	Assessment of Knowledge	
	Can produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team Can investigate famous manufacturing and engineering companies relevant to the project	What is a cam and when would it be used? Can you explain the mechanical system in your work? What different types of movement can a cam create? What happens if I use a different shaped cam?	

MEDIUM TERM PLAN

Design Technology

Spring 2
Year 5

	Topic: Structure – Bridge building	Term: Spring	Year: 5

Foundations of previous learning:

- Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.
- Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. **Making** • Formulate a clear plan, including a step-by-step list of what needs to be done and lists 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 and decorative techniques suitable for the product they are designing and making.	Can generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web based resources Can develop a simple design specification to guide their thinking, communicate ideas through discussion and drawings. Can use correct vocabulary to show understanding: Cam, snail cam, off-centre cam, peg cam, pear shaped cam, follower, axle, shaft, crank handle, housing framework Can produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team Can select and use a range of tools and equipment to make products that are accurately assembled and well finished	Learn about existing bridges Transporter Bridge **Ferdinand Joseph Arnodin** (1845-1924), Skerne Bridge Darlington – Ignatius Bonomi. Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know where the weak points are likely to be. Know and use technical vocabulary relevant to the project. Know how to produce a detailed, step-by-step plan, listing tools and materials. • sketches should be annotated with notes to help develop and communicate their ideas.	frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional
Evaluating • Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Research key events and individuals relevant to frame structures.	Can compare the final product to the original design specification Can test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose Can consider the views of others to improve their work.		
	Assessment of Skills	**Assessment of Knowledge**	
	Can produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team Can investigate famous manufacturing and engineering companies relevant to the project	Can you name some famous bridges and who designed them? Explain how the bridge was made and how it was strengthened? How can I reinforce a square framework?	

MEDIUM TERM PLAN

Design Technology

Summer 2
Year 5

	Topic: Invaders and Settlers – Vikings - Levers and Pulleys	Term: Summer	Year: 5

Foundations of previous learning:

- Experience of axles, axle holders and wheels that are fixed or free moving.
- Basic understanding of electrical circuits, simple switches and components.
- Experience of cutting and joining techniques with a range of materials including card, plastic and wood.
- An understanding of how to strengthen and stiffen structures.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. **Making** • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. • Investigate famous manufacturing and engineering companies relevant to the project.	Can generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web based resources Can develop a simple design specification to guide their thinking, communicate ideas through discussion and drawings. Can use correct vocabulary to show understanding: Pulley drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor Can produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team Can select and use a range of tools and equipment to make products that are accurately assembled and well finished Can compare the final product to the original design specification Can test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose Can consider the views of others to improve their work Can investigate famous manufacturing and engineering companies relevant to the project	Know how gears and pulleys can be used to speed up, slow down or change the direction of movement. (Explore through FT) • Communicate ideas through detailed, annotated drawings from different views and/or exploded diagrams. The drawings should indicate the design decisions made, including the location of the mechanical and electrical components, how they work as a system with an input, process and output, and the appearance and finishing techniques for the product. • Produce detailed step-by-step plans and lists tools, equipment and materials needed. If	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, output design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief
	Assessment of Skills	**Assessment of Knowledge**	
	Can develop a simple design specification to guide their thinking, communicate ideas through discussion and drawings. Can select and use a range of tools and equipment to make products that are accurately assembled and well finished Can test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose	How do gears and pulleys effect movement? What can I do to make the pulley move in opposite directions? Where is the gear/pulley used in your design and what is it doing?	

MEDIUM TERM PLAN

Design Technology

Autumn 2
Year 6

	Topic: Brazil	Term: Autumn	Year: 6

Foundations of previous learning:

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.
- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. • Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose. • Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. **Making** • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. **Evaluating** • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g.	Can generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification Can explore a range of ideas, make a design to develop a final product linked to user and purpose. Can use correct vocabulary to show understanding: Yeast, dough, unleavened, baking soda, gluten, allergy, intolerance, knead, combine Can write a step-by-step recipe, including a list of ingredients, equipment and utensils Can select and use a range of utensils and equipment accurately to measure and combine appropriate ingredients Can make, decorate and present the food product appropriately for the intended user and purpose Can carry out sensory evaluations of a range of relevant products and ingredients. Can record the evaluations using e.g. tables/charts/graphs such as star diagrams Can understand how key chefs have influenced eating habits to promote varied and healthy diets Can investigate famous manufacturing and engineering companies relevant to the project	Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary. Know which ingredients could be substituted. Using annotated sketches, discussion and information and communication technology if appropriate, ask children to develop and communicate their ideas. Ask children to record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt through IEAs and FTs. Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification previously agreed.	Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief
	Assessment of Skills	**Assessment of Knowledge**	
tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets.	Can children explore a range of ideas of food for a festival, linked to user and purpose? Can the children write a step-by-step recipe, including a list of ingredients, equipment and utensils? Can the children carry out evaluations of a range of relevant products and ingredients and can they record the evaluations using e.g. tables/charts/graphs such as star diagrams?	How can I ensure I make a healthy product? What should I be aware of when making food for others? What cooking techniques did you use? Could I change any ingredients to alter the taste and appearance of the product?	

MEDIUM TERM PLAN

Design Technology

Spring 2
Year 6

	Topic: WW2 - alarm	Term: Spring	Year: 6

Foundations of previous learning:
Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.
- Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • 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. • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. **Making** • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. • Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. **Evaluating**	Can use research to develop a design specification for a functional product that responds automatically to the changes in an environment. Take account of constraints including time, resources and cost Can generate and develop innovative ideas and share and clarify these through discussion, annotated drawing, pictorial representations of electrical circuits or circuit diagrams Can use correct vocabulary to show understanding: Series circuit, parallel circuit, names of switches and components, input device, output device, control, flow chart. Can formulate step-by-step to guide making, listing tools, equipment, materials and components Can competently select and accurately assemble materials and securely connect electrical components to produce a reliable, functional product Can create and modify a computer control program to enable an electrical product to work automatically in response to changes to the environment Can continually evaluate and modify the working features of the product to match the initial design specification Can test the system to demonstrate its effectiveness for the intended user and purpose Can investigate famous inventors who developed ground-breaking electrical systems and components	Understand and use electrical systems in their products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Drawings should indicate the design decisions made, including the location of the electrical components and how they work as a system with an input, process and output. Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate, allocate tasks within a team. Make high quality products, applying knowledge, understanding and skills from IEAs and FTs. Create and modify a computer control program to enable the product to work automatically in response to changes in the environment. Critically evaluate throughout and the final product, comparing it to the original design specification. Test the system to demonstrate its effectiveness for the intended user and purpose. **Inventor: Thomas Edison**	series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose
• Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. • Investigate famous inventors who developed ground-breaking electrical systems and components.	**Assessment of Skills** Can use correct vocabulary to show understanding: Series circuit, parallel circuit, names of switches and components, input device, output device, control, flowchart Can select and assemble materials and securely connect electrical components to produce a functional product Can investigate and name famous inventors who developed electrical systems and components	**Assessment of Knowledge** Who is Thomas Edison and what did he do? Know what a series circuit is. Know what a parallel circuit is.	

MEDIUM TERM PLAN

Design Technology

Summer 2
Year 6

	Topic: Amazing America: Combining different fabric shapes - bags	Term: Summer	Year: 6

Foundations of previous learning:

- Experience of basic stitching, joining textiles and finishing techniques.
- Experience of making and using simple pattern pieces.

Unit Learning

NC Objective - Coverage	Skills	Knowledge	Vocabulary
Designing • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. **Making** • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constrai nts of time, resources and cost.	Can generate innovative ideas by carrying out research including surveys, interviews and questionnaires Can develop, model and communicate ideas through talking, drawing, mock-ups and prototypes and where appropriate, computer aided design Can use correct vocabulary to show understanding: Seam, seam allowance, wadding, reinforce, hem, template, pattern pieces, fastening, authentic Can produce detailed lists of equipment and fabrics relevant to their tasks Can formulate step-by-step plans and if appropriate, allocate tasks within a team Can select from and use a range of tools and equipment to make products that are accurately assembled and well finished.	Set an authentic and meaningful design brief. Children generate ideas by carrying out research using e.g. surveys, interviews, questionnaires and the web. Children develop a simple design specification for their product. ***(Lulu Guiness) Vaho: Recycled bags Barcelona made from old advertising banners)*** A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate. Communicate ideas through detailed, annotated drawings from different perspectives and/or computer- aided design. Drawings should indicate design decisions made, the methods of strengthening, the type of fabrics to be used and the types of stitching that will be incorporated.	seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype
Evaluating • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work.	Can investigate and analyse textiles products linked to the final product Can compare the final product to the original design specification Can test products with intended user and critically evaluate the quality of the design, manufacture functionality and fitness for purpose Can consider the views of others to improve their work	Produce step-by-step plans, lists of tools equipment, fabrics and components needed. Allocate tasks within a team if appropriate. Make high quality products applying knowledge, understanding and skills from IEAs and FTs. Incorporate simple computer-aided manufacture (CAM) if appropriate e.g. printing on fabric. Children use a range of decorating techniques to ensure a well-finished final product that matches the intended user and purpose. Evaluate both as the children proceed with their work and the final product in use, comparing the final product to the original design specification. Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for intended user and purpose, considering others' opinions. Communicate the evaluation in various forms e.g. writing for a particular purpose, giving a well-structured oral evaluation, speaking clearly and fluently.	
	Assessment of Skills	**Assessment of Knowledge**	
	Can develop, model and communicate ideas through talking, drawing, mock-ups and prototypes and where appropriate, computer aided design Can select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Can test products with intended user and critically evaluate the quality of the design, manufacture functionality and fitness for purpose	How can I stiffen, reinforce or cushion fabric to make it stronger? What was the best way to attach the pieces and which stitch did you use? What choice of fasteners did you have and why did you choose a particular one?	

CORE DISCIPLINARY LEARNING

Design Technology

Whilst the technical knowledge above is unit specific, the following disciplinary end points are the core disciplinary learning to assess children's progress against for each unit. These core end points have been drawn from the detailed MTPs and resultant progression maps. Children are not expected to have mastered these statements until the end of the year, but teachers must highlight on the assessment trackers where children are failing to make progress against the below statements, which may indicate that they are not progressing comfortably towards these curriculum end points.

	DESIGNING	MAKING	EVALUATING
Reception			
Year 1	• Generate ideas based on simple design criteria. • Communicate ideas through talk and drawings. • Plan by deciding what to do next. Select and use simple tools and utensils – explaining their choices. • Evaluate how well the product works and whether it will be liked by the intended user.	• Plan by deciding what to do next Select and use simple tools and utensils – explaining their choices.	• Evaluate how well the product works and whether it will be liked by the intended user.
Year 2	• Generate initial ideas and their own design criteria. • Use annotated sketches to communicate their ideas.	• Select tools and resources from a range of equipment. • Use finishing techniques.	• Evaluate their products throughout and their final product against the original design criteria.

CORE DISCIPLINARY LEARNING

Design Technology

	DESIGNING	MAKING	EVALUATING
Year 3	• Generate realistic ideas and design criteria focusing on the user and purpose of the product. • Use final product sketches and prototypes to communicate their ideas.	• Plan the main stages of making. • Select materials according to their functional and aesthetic properties.	• Take in to account others' views when evaluating against design criteria.
Year 4	• Develop ideas and design criteria through the analysis of existing products.	• Plan and explain the main stages of making. • Select and use finishing techniques suitable for the product.	• Evaluate their ideas and products against their design criteria – identifying strengths and weaknesses in their work.
Year 5	• Gather information about users' needs through research (interviews, questionnaires, surveys etc). • Develop a simple design specification	• Formulate step by step plans. • Produce detailed lists of equipment and materials.	• Compare final products against original design specifications, taking in to account the views of others.

CORE DISCIPLINARY LEARNING

Design Technology

	DESIGNING	MAKING	EVALUATING
Year 6	• Develop a design specification taking in to consideration the constraints of time, cost and resources. • Communicate ideas through exploded drawings and circuit diagrams.	• Independently select the tools and resources required. • Work within the constraints of time, resources and cost.	• Test products with the intended user to critically evaluate the quality of manufacture, functionality and fitness for purpose.

Key Vocabulary

	Autumn	Spring	Summer
Year 1	slider, lever, pivot, slot, bridge, guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards, design, make, evaluate, user, purpose, ideas, design criteria, function	cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder, design, make, evaluate, user, purpose, ideas, design criteria, product, function hard, soft, cuddly, shiny, wood, metal, fabric, large, small, pull along, wind up, joining, glue, tape, string, design, decorate, evaluate, stiff, stable, shaping	fruit names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating, tasting, arranging, popular, design, evaluate, criteria
Year 2	vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment, materials, design, make, evaluate, purpose, user, ideas, design criteria, function	cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder, design, make, evaluate, purpose, user, ideas, design criteria, function	names of existing products, joining and finishing techniques, tools, fabrics, components, template, pattern pieces, mark out, join, decorate, finish, features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function
Year 3	mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief	components, fixing, attaching, tubing, syringe, plunger, split pin, paper fastener, pneumatic system, input movement, process, output movement, control, compression, pressure, inflate, deflate, pump, seal, air-tight, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, research, evaluate, ideas, constraints, investigate	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, user, purpose, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces

Key Vocabulary

	Autumn	Spring	Summer
Year 4	fabric, names of fabrics, fastening, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces	name of products, names of equipment, utensils, techniques, ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations	series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, user, purpose, function, prototype, design criteria, innovative, appealing, design brief
Year 5	cam, snail cam, off centre cam, peg cam, pear shaped cam, follower, axle, shaft, crank, handle, housing, framework, rotation, rotary motion, oscillating motion, reciprocating motion, annotated sketches, exploded diagrams, mechanical system, input movement, process, output movement, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief	frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, research, functional	pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output, design designs, functionality, innovation, authentic, user, purpose, design specification, design brief
Year 6	yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beta, roll out, shape, sprinkle, crumble, design specification, innovative, research, evaluate, design brief	series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart, function, innovative, design speculation, design brief, user, purpose	seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern piece, name of textiles and fastenings, pins, needles, thread, pinking shears, fastenings, iron transfer paper, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype

INFLUENTIAL DESIGNERS

Design Technology

Examples of designers through the years and their contribution to the design World.

Annie Easley She started as a 'human computer' but quickly moved to creating computer coding.	**Miyamoto** The most innovative and influential game designer of all time for providing games that all others try to measure up to.	**Benardos Nikolai Nikolaevich (18 42-1905)** Well known for the use of metal arc welding named, 'Bernado's Way'. Today it is the most commonly used form of welding.	**Steven Spielberg** Designed and created many films for which he still famous today.
Avi Schiffmann Taught himself to computer code at the age of 7. At high school he created what has become of the world's largest COVID-19 tracking websites.	**Alexander Graham Bell** Created a simple receiver that turned electricity into sound.	**Laurence Roderick Llewelyn-Bowen (born 11 March 1965)** Is an English interior designer and television personality best known for appearing on the BBC programme Changing Rooms.	**Jonathan Ive, 1967** Best known for his work at Apple Inc., where he served as senior vice president of industrial design and chief design officer.

DESIGN CAREERS

Design Technology

Sound Engineer Adjusting the sound levels for productions.	**Industrial Designer** Developing and refining products.	**Mechanical Designer** Design, test, construct a variety of equipment, engines and tools.	**Web Developer** Design and develop websites.
Graphic Designer Creating visual material for companies.	**Video Game Designer** Transform concepts into playable goods.	**Interior Designer** Create beautiful living and working environments.	**Arts Director** Working in newspapers, product packaging, adverts and publications.
Welding Engineer Mass production for submarine building to furniture making.	**Medicine** Designing and testing medicines to fight diseases.	**Game Design** Computer aided design (CAD) creating characters and scenes for computer games.	**Digital Film Making** Designing scenes for films.
Manufacturer Designing, making and, testing and evaluating products.	**Computer Science** Computer based designing and product design.	**Motion Graphics** Transforming static designs into moving pictures.	