

# Design Technology @ Wellfield Middle School : Long Term Planning




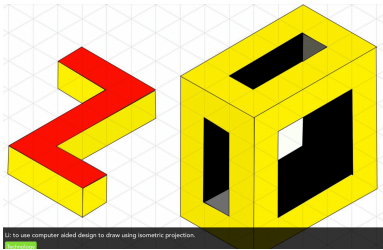

Year 5			
T r a n s i t i o n  & B a s e l i n e	Autumn	Spring	Summer
		<u>Topic: Shelters</u>	<u>Topic: Mechanical Systems</u>
	<p><b>Overview:</b> Develop skills in teamwork to make a shelter. Investigate and analyse a range of existing shelters designed specifically to help homeless people and people suffering from natural disasters.</p>	<p><b>Overview:</b> Pupils investigate, analyse and evaluate everyday products and existing pre-made toys that incorporate gear and pulley systems.</p>	<p><b>Overview:</b> During this unit pupils will learn where their food comes from. Pupils learn how seasons affect food availability and the impact on the environment of eating foods which are not in season. They will prepare a variety of simple savoury dishes such as deli salad using a range of kitchen equipment.</p>
	<p><b>Purpose of unit &amp; links:</b> Develop sketching skills to design and make a shelter. Pupils will research existing shelters and evaluate their work against the design criteria. Pupils will be able to understand the impact of forces and stresses on different materials and objects. They will be able to explain how a material may be reinforced or stiffened using a range of techniques. They will be able to explain processes that can affect the strength of a material.</p>	<p><b>Purpose of unit &amp; links:</b> During this unit pupils will learn about gears and pulleys and where they are used. Pupils will go on to make a motorised car frame with a motor and a small pulley. This unit will link to Mathematics – understand ratios. Apply understanding and skill to carry out accurate measuring using standard units i.e. cm/mm. Science – apply knowledge and understanding of circuits, switches, conductors and insulators. Recognise that some mechanisms, including pulleys and gears, allow a smaller force to have a greater effect.</p>	<p><b>Purpose of unit &amp; links:</b> During this unit pupils will learn where their food comes from and will develop their understanding of what makes a healthy meal. Pupils learn about tools safety and food hygiene. They will develop their understanding of what makes a healthy meal. <a href="#">Links with Science topic Animals including Humans</a> <a href="#">Links with Humanities topic to be studied in Y6.</a></p>
	<p><b>Subject knowledge:</b> <b>Designing</b> Carry out research into user needs and look at existing shelters using surveys, interviews, questionnaires and web based resources. Develop a design criteria to guide the development of their ideas and products, taking into account the constraints of time, resources and cost. Generate, develop and model innovative ideas, through discussion, annotated sketches and making prototypes.  <b>Making</b> 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, shape and join materials to make frameworks. Use finishing and decorative techniques suitable for the product they are making. <b>Evaluating</b> Investigate and evaluate a range of existing structures.</p>	<p><b>Subject knowledge:</b> <b>Designing</b> 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.  <b>Making</b> Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. Demonstrate the accurate use of tools and equipment.  <b>Evaluating</b> 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.</p>	<p><b>Subject knowledge:</b> To know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.  To know that to be active and healthy, food and drink are needed to provide energy for the body.  To know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Guide.  To know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.</p>

<p>Identify strengths and areas for improvement in their structures.</p> <p>Research key events and individuals relevant to frame structures. eg. Millennium bridge Eiffel Tower</p> <p>Technical knowledge and understanding Understand how to strengthen, stiffen and reinforce a 3D framework.</p>	<p>Consider the views of others to improve their work. Investigate famous manufacturing and engineering companies relevant to the project.</p> <p><b>Technical knowledge and understanding</b> Understand that mechanical and electrical systems have an input, process and an output. Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project.</p>	
<p><b>Coherence:</b> Links to structures year 4/ links to photograph frames</p> <p><b>Communication:</b> Annotated sketches and 3D models exploded diagrams</p> <p><b>Creativity:</b> Developing design ideas.</p> <p><b>Compassion:</b> Helping others to succeed. Teamwork</p> <p><b>Community:</b> How designers use empathy to design shelters to help homeless people. Develop an understanding of how designers help homeless people. Look at initiatives to help homeless people. (Blankets out of Crisp packets) Invite local initiatives to talk/connect with pupils.</p>	<p><b>Coherence:</b> Prior learning of axles and basic understanding of electrical circuits, simple switches and components. Experience of cutting and joining techniques and an understanding of how to strengthen and stiffen structures.</p> <p><b>Communication:</b> Annotated sketches and 3D models exploded diagrams</p> <p><b>Creativity:</b> Developing design ideas.</p> <p><b>Compassion:</b> Helping others to succeed. Teamwork</p> <p><b>Community:</b> How could gears and pulleys be used to help the community?</p>	<p><b>Coherence:</b> Links with Science topic 'Animals including humans'</p> <p>Y5 pupils learn about the Eatwell Guide which will be revisited in each year group with increasing depth and will learn basic food preparation skills. (Claw and bridge grip)</p> <p><b>Communication:</b> Sharing recipes</p> <p><b>Creativity:</b> Developing recipes being creative with food waste.</p> <p><b>Compassion:</b></p> <p><b>Community:</b> Look at the community and how food banks help others.</p>
<p><b>Disciplinary literacy skills:</b> <b>To analyse and describe</b> the purpose of a product. <b>To research</b>, show products, possible materials and to communicate main findings.</p> <p><b>Key Vocabulary:</b> Frame structure, stiffen, strengthen, reinforce, triangle structure, stability, shape, joint temporary/permanent, annotated sketch, purpose, user, innovation, research, functional, exploded diagram, design brief, design criteria, prototype, purpose, user,</p> <p><b>Careers:</b> Different types of engineers <b>Influential Designers:</b> The designer of the Sheikh Zayed Bridge in Abu Dhabi and many famous buildings. Isambard Kingdom Brunel</p>	<p><b>Key Vocabulary:</b> 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</p> <p><b>Careers:</b></p>	<p><b>Disciplinary literacy skills:</b> Reading recipes.</p> <p>Cooking, food hygiene, cross contamination. fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied. utensils, combine, fold, knead, stir, pour, mix rubbing in, whisk, beat, roll out, shape, sprinkle, crumble,</p> <p><b>Careers:</b> Chef <b>Influential Chefs:</b> Jamie Oliver</p>

Year 6				
T r a n s i t i o n  & B a s e l i n e	Autumn	Spring	Summer	
		<b><u>Topic: Cam Toys</u></b>	<b><u>Topic: Textiles - Make a phone cover Textiles</u></b>	<b><u>Topic: Food -Global Foods</u></b>
		<b><u>Overview:</u></b> Children learn about controlling movement with a cam mechanism as part of a simple toy. They will learn to analyse a product and sketch and annotate design ideas.	<b><u>Overview:</u></b> Pupils will experience basic stitching, joining textiles and finishing techniques. Pupils will investigate, analyse and evaluate a range of existing products that have been produced by combining fabric shapes looking at how they have been constructed. What are the properties of different fabrics? What are modern and smart textile materials? How can textiles become more sustainable? What are the different types of stitches used in textiles? How to use tools and equipment to mark out phone holders accurately? How can we correctly apply a finish to our phone holder?	<b><u>Overview</u></b> Pupils learn how seasons affect the foods available and develop their skills in cooking to plan, prepare and cook a savoury dish. Understand the needs of a healthy varied diet and are introduced to the Eatwell Guide. Pupils will have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.
		<b><u>Purpose of unit &amp; links:</u></b> They extend their making skills by developing techniques in cutting, shaping and joining to combine components and by selecting tools and equipment to measure, mark out and cut accurately.	<b><u>Purpose of unit &amp; links:</u></b> Experience of basic stitching, joining textiles and finishing techniques Experience of making and using simple pattern pieces and learning about different types of materials.	<b><u>Purpose of unit &amp; links:</u></b> Pupils will develop an understanding of what makes a healthy meal. They will use their understanding of seasonality to help them select ingredients to create a savoury dish (pizza toast) and will develop their skills by using a variety of techniques such as peeling, chopping, slicing, grating, mixing, spreading, grilling or to make a savoury dish. Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.
	<b><u>Subject knowledge:</u></b> <b><u>Purpose of unit &amp; links:</u></b> <b>Prior learning</b> 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 including card, plastic and wood. An understanding of how to strengthen and stiffen structures. <b>Designing</b> Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking.	<b><u>Subject knowledge:</u></b> Prior learning Experience of basic stitching, joining textiles and finishing techniques. <b>Designing</b> 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. <b>Making</b> Produce detailed lists of equipment and fabrics relevant to their tasks. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.	<b><u>Subject knowledge:</u></b> To know that seasons may affect the food available To know how we are able to buy foods which are not in season To know that to be active and healthy, food and drink are needed to provide energy for the body. To know how food is processed into ingredients that can be eaten or used in cooking <b>Making</b> To know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking that recipes can be adapted to change the appearance, taste, texture and aroma To know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health	

<p>Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.</p> <p><b>Making</b> 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 are accurately assembled and well finished. Work within the constraints of time, resources and cost.</p> <p><b>Evaluating</b> Compare the final product to the original design specification. Test products with the intended user, where safe and practical, 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.</p> <p><b>Technical knowledge and understanding</b> 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 project.</p>	<p>Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.</p> <p><b>Evaluating</b> Investigate and analyse textile products linked to their final product. Compare the final product to the original design specification. Test products with intended users and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. <b>Technical knowledge and understanding</b> 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.</p>	<p>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.</p> <p><b>Evaluating</b> Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. 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.</p> <p><b>Technical knowledge and understanding</b> 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.</p>
<p><b>Coherence:</b> <b>Communication:</b> Communicate design ideas with annotated sketches. <b>Creativity:</b> Develop creative design ideas using inspiration from research. <b>Compassion:</b> <b>Community:</b> Links with the North East show to parents and local community.</p>	<p><b>Coherence:</b> Build on basic sewing skills <b>Communication:</b> Communicate and present their ideas to others. <b>Creativity:</b> Use creativity to create unique products <b>Compassion:</b> Consideration on the impact of products after their intended use. <b>Community:</b> How can we reuse and recycle products in the community?</p>	<p><b>Coherence:</b> Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. <b>Communication: Thinking about where our food comes from and where we can buy locally/ create vegetable plots</b> <b>Creativity:</b> How to be creative and substitute ingredients <b>Compassion:</b> Food banks - others living in poverty <b>Community:</b> Food waste solutions.</p>
<p><b>Disciplinary literacy skills:</b> Writing will take place in the form of presentations, annotated sketches, detailed notes, bullet points, lists and extended writing.</p>	<p><b>Disciplinary literacy skills:</b> <b>To record</b> the required features of the product. <b>To research</b>, show products, possible materials and to communicate main findings.</p>	<p><b>Disciplinary literacy skills:</b> <b>Keywords:</b> Cooking, food hygiene, cross contamination. Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition,</p>

<p><b>Keywords:</b> sequence, annotated sketch, exploded diagram, prototype, assemble, mark out, template, axle, cam, follower, framework, linear motion, mechanism, off centre/offset/ eccentric, pivot, rotary motion, shaft, tension</p> <p><b>Careers:</b></p> <p><b>Influential Designers:</b> Rob Ives</p>	<p><b>Keywords:</b> seam, seam allowance, wadding, reinforce, rightside, wrong side, hem, template, pattern pieces, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, mock-up, prototype, aesthetics, function, constraints</p> <p><b>Careers:</b> Pattern Cutter</p> <p><b>Influential Designers:</b> Lucienne Day - Textile</p>	<p>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.</p> <p><b>Careers:</b> Pastry Chef</p> <p><b>Influential Chefs:</b> Dan Barber</p>
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Year 7 Design Technology		
Autumn	Spring	Summer
<p><b>Topic: Keyring/Health and safety</b></p> 	<p><b>Topic:</b> <b>Graphical Communication: isometric 3D drawing. Problem solving</b></p> 	<p><b>Topic: 2D Computer aided design</b></p> 
<p><b>Overview:</b></p> <p>Pupils learn how to use tools and machinery safely in the workshop. Pupils use a coping saw to make a keyring. They develop an understanding of different types of materials hardwoods/softwoods and different types of polymers and develop their understanding of sustainability. They develop skills in 3D computer aided design.</p>	<p><b>Overview:</b></p> <p>Core design skills: Pupils develop one/two point perspective and isometric drawing skills.</p> <p>Pupils choose from 3 different design briefs to develop a creative design solution for a disability.</p>	<p><b>Overview:</b></p> <p>Laser cutter project: Develop 2D drawing skills. Use 2D CAD skills and continue to develop 3D CAD skills. Pupils will also investigate new and emerging technologies and learn about smart and Modern materials.</p>
<p><b>Purpose of unit &amp; links:</b></p> <p>Pupils will develop knowledge of workshop tools and machinery and how to use them safely. Design and make a shaped keyring using a coping saw.</p>	<p><b>Purpose of unit &amp; links:</b></p> <p>Pupils will continue to develop their designing skills and 3D modelling skills. Pupils will develop design specifications and design a product for a disability.</p>	<p><b>Purpose of unit &amp; links:</b></p> <p>Investigate new and Emerging technologies Look at ground breaking products and how and why they have been developed. Understand the properties of materials and know about sustainable materials, including smart materials and how they can be used to a product's advantage.</p>

<p><b>Subject knowledge</b>  Follow procedures for safety and hygiene  To use handcraft skills to mark out work with some precision.  To know how to classify materials by structure e.g. hard woods, softwoods, ferrous and non-ferrous, thermoplastic and thermosetting plastics  To begin to use a wider, more complex range of materials taking into account their properties  To develop skills in 3D CAD programmes.</p>	<p><b>Subject knowledge:</b>  Problem Solving  Select and conduct appropriate research methods to investigate a design problem.  Determine the user needs through product analysis.  To know about biomimicry and how it is used to design.  Show how a specification is used when designing and testing.  Generate creative design solutions for a disability.  Begin to understand the iterative design process.  Develop and improve design ideas using sketches, models and prototypes.  Experiment with materials to create personalised and ergonomic designs.  To learn about an increasing range of designers, engineers, chefs, technologists and manufacturers and being able to relate their products to their own designing and making.</p>	<p><b>Subject knowledge:</b>  Develop detailed design specifications to guide their thinking  Develop and communicate design ideas using annotated sketches  Produce ordered sequences and schedules for manufacturing products they design, detailing resources required  Use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely.  Test, evaluate and refine their ideas and products against a specification and identify ways of improving them.  Actively involve others in the testing of their products  To learn about an increasing range of designers, engineers, chefs, technologists and manufacturers and being able to relate their products to their own designing and making.</p>
<p><b>Coherence:</b> Build on practical skills  <b>Communication:</b> Communicate through discussion and using 3D design software.  <b>Creativity:</b> Show creativity in keyring design  <b>Compassion:</b> consider others when working safely in the workshop.  <b>Community:</b> How can we be safe in our community and look after others.</p>	<p><b>Coherence:</b> Learn about different types of design careers.  <b>Communication:</b> Learn a variety of ways to communicate design ideas.  <b>Creativity: Problem solving</b> - How can I make a product to meet the needs of the user.  <b>Compassion:</b> Show an understanding of what happens to a product at the end of its life.  <b>Community:</b> How do designers do surveys to ask the community to develop products?</p>	<p><b>Coherence:</b> Developing design and making skills.  <b>Communication:</b> Modelling and sketching design ideas.  <b>Creativity:</b> How are designers creative when developing ground breaking products?  <b>Compassion:</b> Thinking of others' needs.  <b>Community:</b> How can a bee hotel benefit the wider community?</p>
<p><b>Disciplinary literacy skills:</b>  Writing will take place in the form of presentations, annotated sketches, detailed notes, bullet points, lists and extended writing.</p> <p>Keywords: coping saw, pillar drill, vice, health and safety, hardwoods, softwoods, manufactured boards, polymorph, polymers, ferrous and non ferrous metals</p> <p><b>Careers:</b> Furniture designer, <b>Influential Designers:</b> Ettore Sottsass  Memphis Design Movement</p>	<p><b>Disciplinary literacy skills:</b>  <b>To analyse and describe</b> the purpose of a product.  <b>To record</b> the required features of the product.  <b>To describe</b> how to make a product.  <b>To evaluate</b> the design process.</p> <p>isometric, one/two point perspective, prototype, design specification, orientation, extrusion, isometric, oblique, exploded diagram, perspective drawing, render, thin and thick line, Design specification, aesthetics, function, design influence</p> <p><b>Careers:</b> 3D design/ Graphic design/ Prosthetist</p> <p><b>Influential Designers:</b> Margaret Calvert - Signs  To learn about 'The history of prosthetics'</p>	<p><b>Disciplinary literacy skills:</b>  <b>To research</b>, show products, possible materials and to communicate main findings.  <b>To describe</b> how to make a product.  <b>To evaluate</b> the design process.  Links to maths, english, science and geography.</p> <p>adaptable, appearance, component, flatpack, slots, design development, Artificial intelligence, robotics, autonomous vehicles, internet of things.  Thermochromic, hydrochromic, photochromic, polymorph, adjust, align</p> <p><b>Careers:</b> Robotics engineer  <b>Influential Designers:</b> Red Dot Design Award winners. Tesla</p>

## Year 8 Design Technology

### Autumn

**Topic: Flatpack Mobile Phone Stand - Iterative design**



**Overview:**

Pupils will design and make a flatpack mobile phone stand using the iterative design process. They will make model prototypes of their design ideas, develop their designs and make a final product in birch plywood using a range of tools. Fixperts - Pupils will look at how designers have used the 5C's to design a product taking into consideration the clients needs.

### Spring

**Topic: Innovation through iterative design - Light Project**

LI: To evaluate prototype, making suggestions for improvements.

Explain the modifications (changes) you intend on making to your prototype. Use full sentences.

wooden pole down the middle for stability

added colour for decoration

led goes on the inside

added sides to the base for stability

Upload a photograph of the first iteration of your prototype

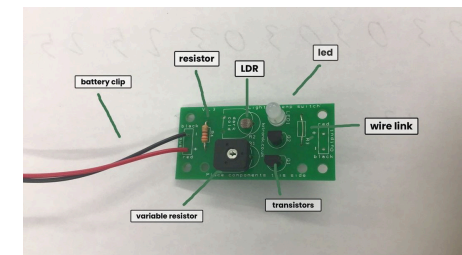
Iterative design: The iterative design process is a repeated and collective cycle of regular projects in order to improve and refine design ideas to ensure they best meet the needs of the final user. DATE: \_\_\_\_\_

**Overview:**

Using the iterative design process design and make a prototype of a light that is low-cost, safe and environmentally friendly.

### Summer

**Topic:**  
Dyson - Reverse engineering / Soldering Circuits  
CAD - Coaster Design Project



**Overview:**

Pupils take apart a Dyson Machine, identifying design clues, to understand the engineering thinking behind how and why it works.  
Pupils will learn how to solder. Pupils will solder a circuit incorporating a light dependent resistor.  
Pupils will develop knowledge about different types of manufacture. (3D printing, injection moulding, soldering )  
Pupils look at a range of design solutions from a variety of settings. Fixperts - designing for a purpose. Fixperts - Pupils

		will look at how designers have used the 5C's to design a product taking into consideration the clients needs.
<p><b><u>Purpose of unit &amp; links:</u></b></p> <p>Pupils will explore sustainable material choices and develop their skills in manufacture to make a product taking into consideration user needs. They will write a design specification for their product and test and evaluate their product. They will investigate, analyse and evaluate a range of phone stands.</p>	<p><b><u>Purpose of unit &amp; links:</u></b></p> <p>Develop skills in 3D modelling. Designing taking into consideration form and function. Showcase inspiring products and analyse existing products eg iconic Anglepoise lamp. Look into other cultures and how light is used. Research the health and wellbeing, socio-economic contexts of their intended users.</p>	<p><b><u>Purpose of unit &amp; links:</u></b></p> <p>Gain understanding of a less familiar product and how it works. Reverse engineering Dyson. To develop handcraft skills and knowledge of products they are less familiar with using - soldering. 3D CAD (Autodesk Fusion 360/Tinkercad) Use 3D CAD to model, develop and present their ideas. Tinkercad - Electronics - Circuits</p>
<p><b><u>Subject knowledge:</u></b></p> <p>Develop and communicate design ideas using detailed annotated sketches. Generate design ideas using 3D models, sketches and prototypes. Communicate plans clearly so that others can implement them. Follow procedures for safety and hygiene and understand the process of risk assessment Use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety Evaluate their products against their original specification and identify ways of improving them Consider ergonomics and anthropometrics when designing.</p> <p>To know about an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their products to their own designing and making. The positive and negative impact that products can have in the wider world. Actively involve others in the testing of their products. Select appropriate methods to evaluate their products in use and modify them to improve performance. Follow procedures for safety and hygiene.</p>	<p><b><u>Subject knowledge:</u></b></p> <p>To investigate and analyse existing products. To investigate and evaluate new and emerging technologies. To consider the positive and negative impact that products can have on the world. Develop a design brief. Develop and communicate design ideas using annotated sketches Use the iterative design process to design and make a product. Generate design ideas using 3D models, sketches and prototypes. Match and select suitable materials considering their fitness for purpose.</p> <p>Actively involve others in the testing of their products Investigate and analyse products that they are less familiar with using themselves.</p> <p>The positive and negative impact that products can have in the wider world. Planned obsolescence.</p> <p>Define the following terms: Aesthetics, form and ergonomics.</p>	<p><b><u>Subject knowledge:</u></b></p> <p>To investigate products through disassembly to determine how they are constructed and function.</p> <p>Investigate products that they are less familiar with using themselves - Dyson.</p> <p>To know about an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their products to their own designing and making.</p> <p>Use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely. To know how to make use of sensors to detect heat, light, sound and movement such as light dependent resistors.</p> <p>Follow procedures for health and safety</p>

<p><b>Coherence:</b> Develop handcraft skills <b>Communication:</b> Develop ways to communicate their design ideas. <b>Creativity:</b> Use research to help inspire creative design ideas. <b>Compassion:</b> Show understanding of how design decisions affect the environment. <b>Community:</b> Know how to keep themselves and others safe in the workshop.</p>	<p><b>Coherence:</b> Links with science and geography sustainability. <b>Communication:</b> Present ideas orally <b>Creativity:</b> Using biomimicry to produce creative designs. <b>Compassion:</b> Look at communities around the world that have limited energy supply and consider environmental solutions. (LUTW.org) <b>Community:</b> Look at sustainable types of lamps in developing countries.</p>	<p><b>Coherence:</b> Develop iterative design process thinking. <b>Communication:</b> Use 3D CAD design software <b>Creativity:</b> Using the iterative design process to produce creative design ideas that solve a problem. <b>Compassion:</b> Show empathy with user needs. <b>Community:</b> How would using the circular economy approach benefit us as a community?</p>
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<p><b>Disciplinary literacy skills:</b> Writing will take place in the form of presentations, annotated sketches, detailed notes, bullet points, lists and extended writing. <b>To analyse and describe</b> the purpose of a product. <b>To research</b>, show products, possible materials and to communicate main findings. Aesthetics Purpose Function customer client, environment, size, dimensions, safety, function, materials, design brief, design specification, iterative design, prototype, form</p> <p><b>Careers:</b> What is a product designer? <b>Influential Designers:</b> Gillis Lundgren - History of flatpack furniture. Product design Charles and Ray Eames.</p>	<p><b>Disciplinary literacy skills:</b> <b>To analyse and describe</b> the purpose of a product. <b>To research</b>, show products, possible materials and to communicate main findings. <b>To explain</b> and rework design ideas <b>To evaluate</b> the design process. Iterative design, iteration, models, prototypes, form, aesthetics, ergonomics, solar power, rechargeable batteries, LED, USB, biomimicry, modelling, mock up,</p> <p><b>Careers:</b> STEM careers fair and careers speed dating. <b>Influential Designers:</b> George Carwardine - Anglepoise lamp Research Red Dot winners.</p>	<p><b>Disciplinary literacy skills:</b> <b>To analyse and describe</b> the purpose of a product. <b>To record</b> the required features of the product. <b>To research</b>, show products, possible materials and to communicate main findings. <b>To explain</b> and rework design ideas <b>To evaluate</b> the design process. Keywords: flatpack, scales of production, Ergonomics, anthropometrics</p> <p><b>Careers:</b> Look at the different types of engineers at Dyson. <b>Influential Designers:</b> Dyson</p>
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Year 7 Food and Textiles		
<p><b>Topic:</b> Cushions</p>	<p><b>Topic:</b> Creating healthy meals</p>	<p><b>Topic:</b> Adapt a recipe</p>
<p><b>Overview:</b> Design and make a cushion for a chosen theme.</p>	<p><b>Overview:</b> Pupils will learn in more detail about healthy eating and each of the food groups purpose from the Eatwell Guide.</p>	<p><b>Overview:</b> Pupils will learn how to use a basic recipe and adapt it to create their own version.</p>
<p><b>Purpose of unit &amp; links:</b> Pupils will develop pattern cutting and sewing machine skills.</p>	<p><b>Purpose of unit &amp; links:</b> Pupils will build upon previous knowledge from KS2 of the different food groups on the Eatwell Guide. They will learn how to make a range of healthy meals and foods focussing upon how these will help them to lead a healthy lifestyle.</p>	<p><b>Purpose of unit &amp; links:</b> To produce a range of designs and final design for their own muffin recipe.  Will think about taste combinations and will carry out a range of surveys to consider the consumers needs.</p>
<p><b>Subject knowledge:</b> Develop design specifications to guide their thinking Use research including the study of different cultures, to identify and understand user needs Develop and communicate design ideas using annotated sketches Follow procedures for safety and hygiene Make use of specialist equipment to mark out materials Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives How to select and modify patterns and use in textile construction</p>	<p><b>Subject knowledge:</b> The importance of a healthy and varied diet as depicted in 'The eatwell plate' and eight tips for healthy eating. That food provides energy and nutrients in different amounts; that they have important functions in the body; and that people require different amounts during their life. How to taste and cook a broader range of ingredients and healthy recipes, accounting for a range of needs, wants and values. How to actively minimise food waste such as composting fruit and vegetable peelings and recycling food packaging. How to store, prepare and cook food safely and hygienically.</p>	<p><b>Subject knowledge:</b> Follow procedures for safety and hygiene Carry out their own taste testing using star diagrams to record their thoughts. Conduct market research through a range of surveys Develop and make their own recipe. Carry out the costing of their recipe.</p>

<p><b>Coherence:</b> Build on design and sewing skills.  <b>Communication:</b> Develop sketching techniques.  <b>Creativity:</b> Use creativity to design the front of the cushion.  <b>Compassion:</b> Consider where material comes from.  <b>Community:</b> Link designs to the local community.</p>	<p><b>Coherence:</b> Build on knowledge of 'the eat well plate'  <b>Communication:</b> Use posters to communicate health and safety.  <b>Creativity:</b> Creative ways to adapt recipes and use food waste.  <b>Compassion:</b> Show compassion for the consequence of food waste.  <b>Community:</b> Share recipes with family</p>	<p><b>Coherence:</b>  <b>Communication:</b> Present ideas to the group.  <b>Creativity:</b> Use creativity to come up with taste combinations.  <b>Compassion:</b>  <b>Community:</b></p>
<p><b>Disciplinary literacy skills:</b></p>	<p><b>Disciplinary literacy skills:</b></p>	<p><b>Disciplinary literacy skills:</b></p>
<p>Writing will take place in the form of presentations, annotated sketches, detailed notes, bullet points, lists and extended writing.</p> <p><b>Careers:</b>  <b>Influential Designers:</b></p>	<p><b>Careers:</b>  <b>Influential Designers:</b></p>	<p>Writing will take place in the form of presentations, annotated sketches, detailed notes, bullet points, lists and extended writing.</p> <p><b>Careers:</b>  <b>Influential Designers:</b></p>

### Year 8 Food and Textiles

Year 8 Food and Textiles		
<p><b>Topic:</b> Tie Dye Pencil Case</p>	<p><b>Topic:</b> <b>Food from around the world</b></p>	<p><b>Topic:</b> Upcycling unit</p>
<p><b>Overview:</b> Apply tie dye to fabric and design and make a pencil case and apply CAD/CAM design onto the fabric.</p>	<p><b>Overview:</b> <u>Pupils will consider the benefits of cooking a range of dishes from scratch.</u> Read recipes and adapt for healthy eating. Develop skills in food preparation by making risotto, curry, stir fry.</p>	<p><b>Overview:</b> <u>Pupils will understand the impact that producing items of clothing in particular jeans can have on the environment.</u></p>
<p><b>Purpose of unit &amp; links:</b> Pupils will develop skills in using the sewing machine and CAD/CAM. They will look at how the pencil case is made and make one themselves.</p>	<p><b>Purpose of unit &amp; links:</b> Read and understand a range of labels. Read newspaper articles showing recent allergy cases. Produce an information sheet giving safety advice to new trainees in a restaurant. Why is safety advice important for employers and employees? How to competently use a range of cooking techniques e.g. selecting and preparing ingredients: using utensils and electrical equipment. Consider the costs of ingredients and why it is cheaper and more healthy to cook at home from scratch.</p>	<p><b>Purpose of unit &amp; links:</b> To understand the implications of fast fashion and the manufacturing process on the environment. Pupils will use their skills to find ways to repurpose old items of denim so they won't be sent to landfill. Builds on previous KS2 learning from 'Footprints on my planet' unit.</p>
<p><b>Subject knowledge:</b> Investigate and develop skills in modifying the appearance of materials including textiles and other manufactured materials.</p> <p>Develop and communicate design ideas using annotated sketches</p> <p>Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety</p> <p>To investigate products through disassembly to determine how they are constructed and function.</p>	<p><b>Subject knowledge:</b></p> <p>To understand function and sources of fat, sugar, fibre protein, minerals and vitamins and apply nutritional goals and healthy eating guidelines.</p> <p>How to actively minimise food waste such as composting fruit and vegetable peelings and recycling food packaging.</p>	<p><b>Subject knowledge:</b> Develop and communicate design ideas using annotated sketches</p> <p>Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety</p> <p>Use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely Evaluate their products against their original specification and identify ways of improving them</p>

<p>Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.</p>	<p>How to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment</p> <p>How to taste and cook a broader range of ingredients and healthy recipes, accounting for a range of needs, wants and values</p>	
<p><b>Coherence:</b> Build on sewing machine skills  <b>Communication:</b>  <b>Creativity:</b>  <b>Compassion:</b>  <b>Community:</b></p>	<p><b>Coherence:</b>  <b>Communication:</b>  <b>Creativity:</b> Creative ways to adapt recipes and use food waste.  <b>Compassion:</b> Show compassion for the consequence of food waste.  <b>Community:</b> Compost school waste to help the school community.</p>	<p><b>Coherence:</b> Build on CAM sewing skills  <b>Communication:</b> Sketch design ideas  <b>Creativity:</b> Creative to communicate school life.  <b>Compassion:</b>  <b>Community:</b> Share work with the school community</p>
<p><b>Disciplinary literacy skills:</b></p>	<p><b>Disciplinary literacy skills:</b></p>	<p><b>Disciplinary literacy skills:</b></p>
<p>Writing will take place in the form of presentations, annotated sketches, detailed notes, bullet points, lists and extended writing.  <b>To analyse and describe</b> the purpose of a product.  <b>To research</b>, show products, possible materials and to communicate main findings.</p>		<p><b>To record</b> the required features of the product.  <b>To research</b>, show products, possible materials and to communicate main findings.</p>