

Chiltern Primary School Design and Technology Progression Map
Together, over time, we are proud to learn to make a difference, to ourselves and others.

Our curriculum vision:

- Our Chiltern community celebrates differences and diversity within a safe and nurturing environment.
- A curriculum, which engages and enriches.
- Has ambition for ALL moving all from novice to expert.

What does this look like within DT?

- *Diversity*: Using creativity and originality, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own or others' needs, values.
- *Enrichment*: Offering wide opportunities for broadening their experiences of DT in the wider world and to equip them with skills for the future.
- *Ambition*: Acquire a broad range of subject knowledge (Mathematics, Science, Engineering, Computing and Art) and learning to take risks, becoming resourceful, innovative and capable citizens. Each child will know that their DT has meaning and will confidently create high-quality products, demonstrating increasingly complex knowledge and skills.

Design and Technology Skills for ALL Children at Chiltern.

ALL children will leave Chiltern Primary School with *three main skills*:

Experimenting with design from a wide range of cultures and disciplines

Using DT techniques to broaden their knowledge of Design and Technology

Reflection and evaluative communication ensure the creation of high-quality products

What we want a designer at Chiltern to achieve:

We follow the National Curriculum by incorporating DT skills with areas of experience, for e.g. Mechanical systems/Pneumatics.

We have a strong focus on the use of DT vocabulary which will enable our children to communicate their opinions about their own work and work of others.

We are inspired by different designers and technological advances to create their own interpretation.

The National Curriculum Expectations:

I National expectations:	KS2 National Expectations
<p>Pupils should be taught to:</p> <p>Design:</p> <ul style="list-style-type: none">• 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. <p>Make:</p> <ul style="list-style-type: none">• 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. <p>Evaluate:</p> <ul style="list-style-type: none">• Explore and evaluate a range of existing products;• Evaluate their ideas and products against design criteria. <p>Technical knowledge</p> <ul style="list-style-type: none">• Build structures, exploring how they can be made stronger, stiffer and more stables;	<p>Pupils should be taught to:</p> <p>Design:</p> <ul style="list-style-type: none">• 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. <p>Make:</p> <ul style="list-style-type: none">• 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. <p>Evaluate:</p>

- 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.

- 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 programme, 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.

The National Curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world;
- 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;
- critique, evaluate and test their ideas and products and the work of others;
- understand and apply the principles of nutrition and learn how to cook.

Intent

At Chiltern, our intention is to provide to all children learning opportunities to engage in design technology. Our planning and practice are based on the National Curriculum for Design Technology. We believe design and technology is about designing and making products for a specific user and purpose. It involves children in learning about the world we live in and developing a wide range of knowledge and skills through designing and making. It helps children to think through problems creatively, about how to organise themselves and how to use knowledge and skills to bring about change and to shape the environment.

It is the intent of Chiltern Primary School for Design Technology to be taught in all year groups through at least one topic per term, which includes one topic relating to food. Design Technology projects are often made cross curricular - linking to other subjects taught.

In short, through design and technology children become informed users of products and creative innovators.

Implementation

Through a variety of creative and practical activities, pupils will be taught the knowledge, understanding and skills needed to engage in the process of designing and making. Building on KS1 knowledge and skills, the children in KS2 will continue to design, make and evaluate their work and acquire more technical knowledge. Design and technology will be taught weekly, in half term blocks or during Design and Technology mornings/ afternoons/ days, depending on the needs of the project being worked on. All class teachers will have responsibility for planning and teaching D&T to their classes.

Aim and IMPACT

We believe Design and Technology offers opportunities for children to:

- Develop their capability to create high quality products through combining their designing and making skills with knowledge and understanding;
- Develop a sense of enjoyment and pride in their ability to make;

- Nurture creativity and innovation through designing and making;
- Develop an interest and understanding of the ways in which people from the past and present have used design to meet their needs.

In the Early Years Foundation Stage we provide opportunities for children to:

- Develop a curiosity and interest in the designed and made world through investigating, talking and asking questions about familiar products;
- Develop confidence and enthusiasm through frequent exploration of construction kits to build and construct objects, and activities for exploring joining, assembling and shaping materials

to make products;

- Extend their vocabulary through talking and explaining about their designing and making activities.

A wide range of cultural images and contexts will be used in design and technology, and we will use these opportunities to challenge stereotypes.

- For all children to produce their best, we plan differentiated resources and tasks through:
 - adapted worksheets;
 - changing the demands of a task;
 - more limited choices;
 - greater teacher intervention, small group work and teaching assistant support;
 - ensuring manipulative skills needed are manageable;
 - selecting appropriate tools and equipment.
 - Talented or able children are challenged through more demanding tasks such as more open-ended design briefs, rigorous testing of their products, carrying out independent research, giving additional responsibilities such as leading a team.

DT progression

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> *Select appropriate resources *Use gestures, talking and arrangements of materials and components to show design * Use contexts set by the teacher and myself *Use language of designing and making (join, build, shape, longer, shorter, heavier etc.) 	<ul style="list-style-type: none"> * have own ideas * explain what I want to do *explain what my product is for, and how it will work * use pictures and words to plan, begin to use models * design a product for myself following design criteria *research similar existing products 	<ul style="list-style-type: none"> * have own ideas and plan what to do next * explain what I want to do and describe how I may do it * explain purpose of product, how it will work and how it will be suitable for the user * describe design using pictures, words, models, diagrams, begin to use ICT * design products for myself and others following design criteria * choose best tools and materials, and explain choices 	<ul style="list-style-type: none"> *begin to research others' needs * show design meets a range of requirements * describe purpose of product * follow a given design criteria * have at least one idea about how to create product * create a plan which shows order, equipment and tools *describe design using an accurately labelled sketch and words * make design decisions 	<ul style="list-style-type: none"> * use research for design ideas * show design meets a range of requirements and is fit for purpose *begin to create own design criteria *have at least one idea about how to create product and suggest improvements for design. * produce a plan and explain it to others *say how realistic plan is. *include an annotated sketch 	<ul style="list-style-type: none"> *use internet and questionnaires for research and design ideas *take a user's view into account when designing * begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose *create own design criteria * have a range of ideas *produce a logical, realistic plan and explain it to others. *use cross-sectional 	<ul style="list-style-type: none"> * draw on market research to inform design * use research of user's individual needs, wants, requirements for design * identify features of design that will appeal to the intended user * create own design criteria and specification * come up with innovative design ideas *follow and refine a logical plan. *use annotated sketches, cross-sectional

		<ul style="list-style-type: none"> * use knowledge of existing products to produce ideas 	<ul style="list-style-type: none"> *explain how product will work * make a prototype * begin to use computers to show design 	<ul style="list-style-type: none"> *make and explain design decisions considering availability of resources *explain how product will work * make a prototype *begin to use computers to show design. 	<ul style="list-style-type: none"> planning and annotated sketches * make design decisions considering time and resources. *clearly explain how parts of product will work. *model and refine design ideas by making prototypes and using pattern pieces. *use computer-aided designs 	<ul style="list-style-type: none"> planning and exploded diagrams * make design decisions, considering, resources and cost * clearly explain how parts of design will work, and how they are fit for purpose * independently model and refine design ideas by making prototypes and using pattern pieces * use computer-aided designs
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Make						
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>*Construct with a purpose, using a variety of resources</p> <p>*Use simple tools and techniques</p> <p>*Build / construct with a wide range of objects *Select tools & techniques to shape, assemble and join</p> <p>*Replicate structures with materials / components</p> <p>*Discuss how to make an activity safe and hygienic</p> <p>*Record experiences by drawing, writing, voice recording</p> <p>*Understand different media can be combined</p>	<p>*explain what I'm making and why</p> <p>*consider what I need to do next</p> <p>*select tools/equipment to cut, shape, join, finish and explain choices</p> <p>*measure, mark out, cut and shape, with support</p> <p>*choose suitable materials and explain choices</p> <p>*try to use finishing techniques to make product look good</p> <p>*work in a safe and hygienic manner</p>	<p>*explain what I am making and why it fits the purpose</p> <p>*make suggestions as to what I need to do next.</p> <p>*join materials/components together in different ways</p> <p>*measure, mark out, cut and shape materials and components, with support.</p> <p>*describe which tools I'm using and why</p> <p>*choose suitable materials and explain choices depending on characteristics.</p> <p>*use finishing techniques to make</p>	<p>*select suitable tools/equipment, explain choices; begin to use them accurately</p> <p>* select appropriate materials, fit for purpose.</p> <p>* work through plan in order</p> <p>*consider how good product will be</p> <p>* begin to measure, mark out, cut and shape materials/components with some accuracy</p> <p>* begin to assemble, join and combine materials and components with some accuracy</p> <p>* begin to apply a</p>	<p>* select suitable tools and equipment, explain choices in relation to required techniques and use accurately</p> <p>*select appropriate materials, fit for purpose; explain choices</p> <p>* work through plan in order. * realise if product is going to be good quality</p> <p>* measure, mark out, cut and shape materials/components with some accuracy</p> <p>*assemble, join and combine materials and components with some accuracy</p> <p>*apply a range of finishing techniques with some accuracy</p>	<p>* use selected tools/equipment with good level of precision</p> <p>* produce suitable lists of tools, equipment/materials needed</p> <p>*select appropriate materials, fit for purpose; explain choices, considering functionality</p> <p>* create and follow detailed step-by-step plan</p> <p>* explain how product will appeal to an audience</p> <p>* mainly accurately measure, mark out, cut and shape</p>	<p>* use selected tools and equipment precisely</p> <p>*produce suitable lists of tools, equipment, materials needed, considering constraints</p> <p>* select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics</p> <p>* create, follow, and adapt detailed step-by-step plans</p> <p>*explain how product will appeal to audience; make changes to improve quality</p> <p>* accurately measure, mark out, cut and shape</p>

for a purpose		product look good *work safely and hygienically	range of finishing techniques		materials/components *mainly accurately assemble, join and combine materials/components * mainly accurately apply a range of finishing techniques * use techniques that involve a small number of steps * begin to be resourceful	materials/components * accurately assemble, join and combine materials/components * accurately apply a range of finishing techniques * use techniques that involve a number of steps * be resourceful with practical problems
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Evaluate

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
*Adapt work if necessary *Dismantle, examine, talk about existing objects/structures *Consider and manage some risks *Practise some	*talk about my work, linking it to what I was asked to do * talk about existing products considering: use, materials, how they work, audience, where they might be used	* describe what went well, thinking about design criteria * talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion *evaluate how good	* look at design criteria while designing and making *use design criteria to evaluate finished product * say what I would change to make design	*refer to design criteria while designing and making *use criteria to evaluate product * begin to explain how I could improve original design *evaluate existing products, considering: how well they've	*evaluate quality of design while designing and making *evaluate ideas and finished product against specification, considering purpose and appearance. *test and evaluate final	*evaluate quality of design while designing and making; is it fit for purpose? * keep checking design is best it can be. *evaluate ideas and finished product against specification,

<p>appropriate safety measures independently *Talk about how things work</p> <p>*Look at similarities and differences between existing objects / materials / tools</p> <p>*Show an interest in technological toys</p> <p>*Describe textures</p>	<p>*talk about existing products, and say what is and isn't good</p> <p>* talk about things that other people have made</p> <p>*begin to talk about what could make product better</p>	<p>existing products are</p> <p>*talk about what I would do differently if I were to do it again and why</p>	<p>better</p> <p>*begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose</p> <p>* begin to understand by whom, when and where products were designed</p> <p>* learn about some inventors/designers/ engineers/chefs/ manufacturers of groundbreaking products</p>	<p>been made, materials, whether they work, how they have been made, fit for purpose</p> <p>* discuss by whom, when and where products were designed</p> <p>* research whether products can be recycled or reused</p> <p>* know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products</p>	<p>product</p> <p>* evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose</p> <p>* begin to evaluate how much products cost to make and how innovative they are</p> <p>*research how sustainable materials are</p> <p>*talk about some key inventors/designers/ engineers/ chefs/manufacturers of groundbreaking products</p>	<p>stating if it's fit for purpose</p> <p>*test and evaluate final product; explain what would improve it and the effect different resources may have had</p> <p>*do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose</p> <p>*evaluate how much products cost to make and how innovative they are</p> <p>*research and discuss how sustainable materials are</p> <p>*consider the impact of products beyond their intended purpose</p> <p>*discuss some key inventors/designers/</p>
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							engineers/ chefs/manufacturers of groundbreaking products
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Technical knowledge							
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mechanisms		*begin to use levers or slides	*use levers or slides *begin to understand how to use wheels and axles	*select appropriate tools / techniques *alter product after checking, to make it better *begin to try new/different ideas *use simple lever and linkages to create	*select most appropriate tools / techniques *explain alterations to product after checking it *grow in confidence about trying new / different ideas. *use levers and linkages to create movement *use pneumatics to create movement	*refine product after testing *grow in confidence about trying new / different ideas *begin to use cams, pulleys or gears to create movement	*refine product after testing, considering aesthetics, functionality and purpose *incorporate hydraulics and pneumatics *be confident to try new / different ideas *use cams, pulleys and gears to create movement

Technical knowledge

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials/structures		<ul style="list-style-type: none"> *begin to measure and join materials, with some support *describe differences in materials *suggest ways to make material/product stronger 	<ul style="list-style-type: none"> *measure materials *describe some different characteristics of materials *join materials in different ways *use joining, rolling or folding to make it stronger *use own ideas to try to make product stronger 	<ul style="list-style-type: none"> *use appropriate materials *work accurately to make cuts and holes * join materials *begin to make strong structures 	<ul style="list-style-type: none"> *measure carefully to avoid mistakes *attempt to make product strong *continue working on product even if original didn't work *make a strong, stiff structure 	<ul style="list-style-type: none"> *select materials carefully, considering intended use of product and appearance *explain how product meets design criteria *measure accurately enough to ensure precision *ensure product is strong and fit for purpose *begin to reinforce and strengthen a 3D frame 	<ul style="list-style-type: none"> *select materials carefully, considering intended use of the product, the aesthetics and functionality. *explain how product meets design criteria * reinforce and strengthen a 3D frame



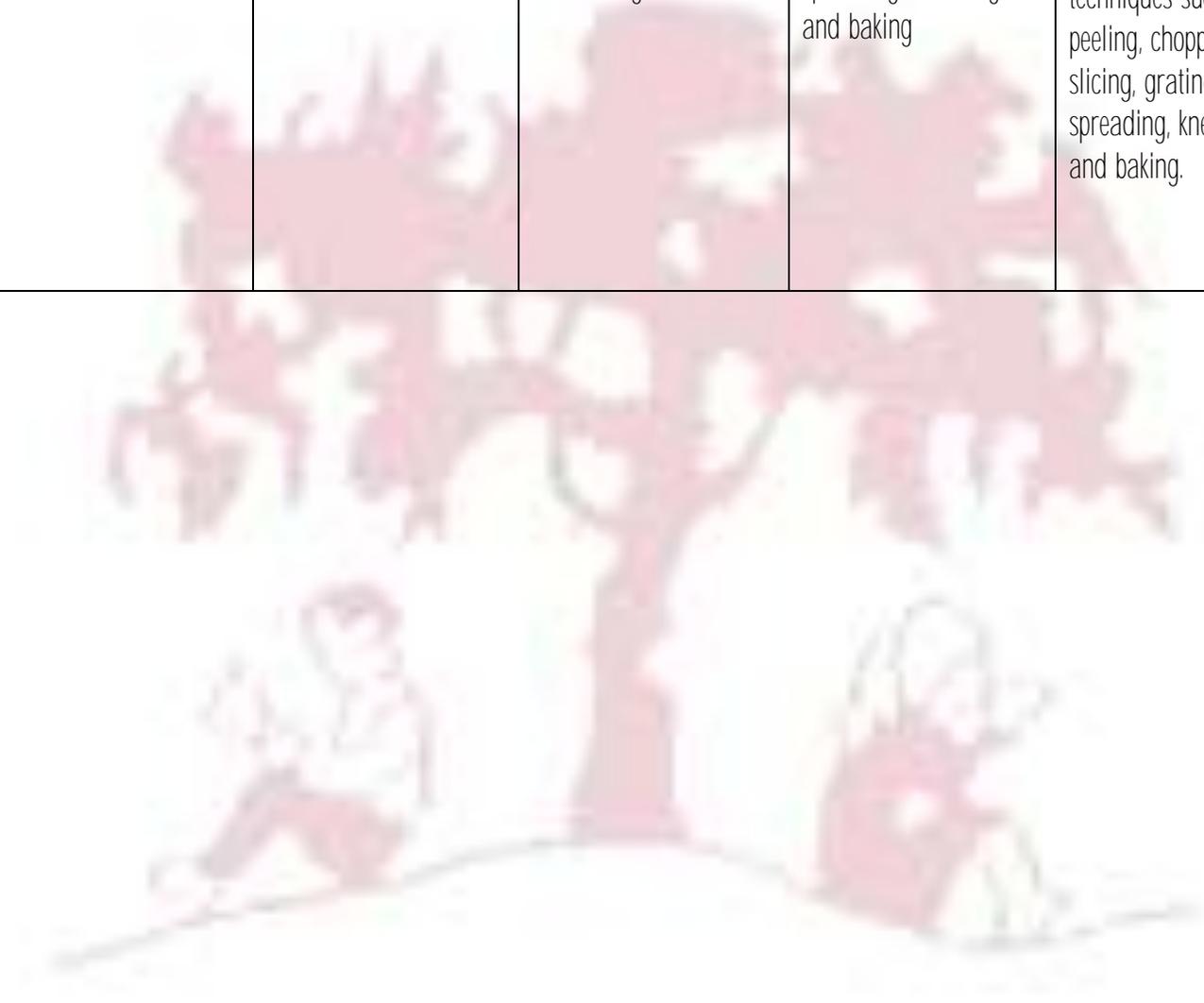
Technical knowledge

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Textiles		<ul style="list-style-type: none"> *measure, cut and join textiles to make a product, with some support *choose suitable textiles 	<ul style="list-style-type: none"> *measure textiles *join textiles together to make a product, and explain how I did it *carefully cut textiles to produce accurate pieces *explain choices of textile *understand that a 3D textile structure can be made from two identical fabric shapes. 	<ul style="list-style-type: none"> *join different textiles in different ways *choose textiles considering appearance and functionality *begin to understand that a simple fabric shape can be used to make a 3D textiles project 	<ul style="list-style-type: none"> *think about user when choosing textiles *think about how to make product strong *begin to devise a template *explain how to join things in a different way *understand that a simple fabric shape can be used to make a 3D textiles project 	<ul style="list-style-type: none"> *think about user and aesthetics when choosing textiles *use own template *think about how to make product strong and look better *think of a range of ways to join things *begin to understand that a single 3D textiles project can be made from a combination of fabric shapes. 	<ul style="list-style-type: none"> *think about user's wants/needs and aesthetics when choosing textiles *make product attractive and strong *make a prototype *use a range of joining techniques *think about how product might be sold *think carefully about what would improve product *understand that a single 3D textiles project can be made from a combination of fabric shapes

Technical knowledge

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Food And nutrition	<p>*Begin to understand some food preparation tools, techniques and processes</p> <p>*Practise stirring, mixing, pouring, blending</p> <p>*Discuss how to make an activity safe and hygienic</p> <p>*Discuss use of senses</p> <p>*Understand need for variety in food</p>	<p>*describe textures</p> <p>*wash hands & clean surfaces</p> <p>*think of interesting ways to decorate food</p> <p>*say where some foods come from,0 (i.e. plant or animal)</p> <p>*describe differences between some food groups (i.e. sweet, vegetable etc.)</p> <p>*discuss how fruit and vegetables are healthy</p> <p>*cut, peel and grate safely, with support</p>	<p>*explain hygiene and keep a hygienic kitchen</p> <p>*describe properties of ingredients and importance of varied diet</p> <p>*say where food comes from (animal, underground etc.)</p> <p>*describe how food is farmed, home-grown, caught</p> <p>*draw eat well plate; explain there are groups of food</p> <p>*describe "five a day"</p> <p>*cut, peel and grate with increasing confidence</p>	<p>*carefully select ingredients</p> <p>*use equipment safely</p> <p>*make product look attractive</p> <p>*think about how to grow plants to use in cooking</p> <p>*begin to understand food comes from UK and wider world</p> <p>*describe how healthy diet= variety/balance of food/drinks</p> <p>*explain how food and drink are needed for active/healthy bodies.</p> <p>*prepare and cook some dishes safely and hygienically</p> <p>*grow in confidence using some of the following techniques:</p>	<p>*explain how to be safe/hygienic</p> <p>*think about presenting product in interesting/ attractive ways</p> <p>*understand ingredients can be fresh, pre-cooked or processed</p> <p>*begin to understand about food being grown, reared or caught in the UK or wider world</p> <p>*describe eat well plate and how a healthy diet variety / balance of food and drinks</p> <p>*explain importance of food and drink for active, healthy bodies</p> <p>*prepare and cook some dishes safely and hygienically</p> <p>*use some of the</p>	<p>*explain how to be safe / hygienic and follow own guidelines</p> <p>*present product well - interesting, attractive, fit for purpose</p> <p>*begin to understand seasonality of foods</p> <p>*understand food can be grown, reared or caught in the UK and the wider world</p> <p>*describe how recipes can be adapted to change appearance, taste, texture, aroma</p> <p>*explain how there are different substances in food / drink needed for health</p> <p>*prepare and cook some savoury dishes safely and hygienically including, where</p>	<p>*understand a recipe can be adapted by adding / substituting ingredients</p> <p>*explain seasonality of foods</p> <p>*learn about food processing methods</p> <p>*name some types of food that are grown, reared or caught in the UK or wider world</p> <p>*adapt recipes to change appearance, taste, texture or aroma.</p> <p>*describe some of the different substances in food and drink, and how they can affect health</p> <p>*prepare and cook a variety of savoury dishes safely and</p>

	*Begin to understand that eating well contributes to good health			peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	appropriate, use of heat source * use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	hygienically including, where appropriate, the use of heat source. *use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.
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Technical knowledge

Technical knowledge							
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electrical systems				<ul style="list-style-type: none"> *use simple circuit in product *learn about how to program a computer to control product. 	<ul style="list-style-type: none"> *use number of components in circuit *program a computer to control product 	<ul style="list-style-type: none"> *incorporate switch into product *confidently use number of components in circuit *begin to be able to program a computer to monitor changes in environment and control product 	<ul style="list-style-type: none"> *use different types of circuit in product * think of ways in which adding a circuit would improve product * program a computer to monitor changes in environment and control product