Billingshurst Primary School – Design and Technology Curriculum

Design and Technology				
Designing/ Generating Ideas		Making		Evaluation
Food and Nutrition	Construction	Textiles	Mechanisms	Electricals

At Billingshurst Primary School, Design and Technology is taught with the intent to maximise the potential of all our pupils; intellectually, socially, morally, emotionally, and culturally. We take every opportunity to encourage a love for learning within all our pupils, based around a resilience for learning and achieving greatness. Most importantly we allow our children to learn in a safe and stimulating environment, where their views are valued, independence is promoted, and ideas are challenged.

Implementation

Design and Technology is mostly taught through discrete, meaningful lessons in which children are taught through the three phases of designing, making, and evaluating their own products. Each year group focuses on 3 strands (from the selection of Cooking and Nutrition, Mechanisms, Construction, Textiles and Electronics) throughout the year and each topic will focus on a separate set of skills which are developed through the years, from Year 1 to Year 6. As children progress through the school, they are presented with opportunities to develop these skills, as similar topics are revisited and built upon. Teachers follow the Whole School Curriculum Map, but are encouraged to be creative with their lessons, whilst still ensuring all aspects of the National Curriculum are covered.

Design and Technology is taught once a term (3 times a year), either consecutively or alternating each half term. The time dedicated to Design and Technology ensures that each topic can be delivered to a high standard and children can create important and useful products, within engaging and meaningful contexts (for example, sewing Christmas tree decorations in Year 2 Textiles). All children are engaged yet challenged during Design and Technology lessons through continuous verbal feedback and through real-life problems presented to them.

During Design and Technology lessons, many cross-curricular links are observed. Maths links are easy to come across during any Design and Technology lesson; children are continuously measuring during the 'design' and 'make' phases of lessons. During cooking topics, children are measuring out ingredients, as well as calculating the quantities of different recipes. Instructions are often created as part of the 'design' phase, which has a direct link to English. Through the children presenting their products confidently oracy skills are practiced. Science knowledge is practiced when children are creating products that require physics knowledge (gears, pulleys, cams, levers, and linkages) and electrical systems (series circuits incorporating switches, bulbs, buzzers and motors). Teachers also encourage children to become capable citizens and consider the impact their product can have on the wider world, to ensure they realise the difference they may make in the future.

Impact

Each topic ends with all children creating a final product; these products are a fantastic way for children to demonstrate the skills they have learnt. Throughout the school, children are given the opportunity to consolidate their skills by creating their final product. Each lesson builds on the previous and children's skills are improved upon throughout each topic. It is also clear to see the progression of skills throughout the school through the quality of products each year group creates. Subject and school leaders monitor the impact of our curriculum provision through completing regular monitoring which includes listening to the voice of our children.

Billingshurst Primary School – Design and Technology Curriculum

Early Years Outcomes	National Curriculum Objectives	
EYFS	**Key Stage 1**	**Key Stage 2**
Design • Begin to show accuracy and care when drawing. • Uses talk to organise, sequence and clarify thinking, ideas, feelings and events. • Gives meaning to marks they make as they draw, write and paint. • Writes labels and captions. **Make** • Uses simple tools to effect changes to materials. **Evaluate** • Make comments about what they have heard and ask questions to clarify their understanding • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary • Offer explanations for why things might happen • Share their creations, explaining the process they have used	**Design** • To design purposeful, functional, appealing products for themselves and other users based on design criteria • To generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology **Make** • To 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** • To explore and evaluate a range of existing products evaluate their ideas and products against design criteria. **Technical knowledge** • To build structures, exploring how they can be made stronger, stiffer and more stable • To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	**Design** • To 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** • To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, joining and finishing], accurately • To 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** • To investigate and analyse a range of existing products • To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • To understand how key events and individuals in design and technology have helped shape the world. **Technical knowledge** • To apply their understanding of how to strengthen, stiffen and reinforce more complex structures • To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • To understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • To apply their understanding of computing to program, monitor and control their products.

Billingshurst Primary School – Design and Technology Curriculum

EYFS – Skills and Knowledge						
Designing/ Generating Ideas	**Making**	**Evaluation**	**Food and Nutrition**	**Construction**	**Textiles**	**Mechanisms**
Begin to show accuracy and care when drawing. Uses talk to organise, sequence and clarify thinking, ideas, feelings and events. Gives meaning to marks they make as they draw, write and paint. Writes labels and captions.	Uses simple tools to effect changes to materials. Uses hands to shape and manipulate materials.	Make comments about what they have heard and ask questions to clarify their understanding Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary Offer explanations for why things might happen Share their creations, explaining the process they have used	Understand the importance of healthy food choices. Use a range of small tools, including cutlery. Eats a healthy range of foodstuffs and understands need for variety in food. EG salads	Use a range of small tools, including scissors. Handles tools, objects, construction and malleable materials safely and with increasing control. Manipulates materials to achieve a planned effect. Constructs with a purpose in mind, using a variety of resources. Uses simple tools and techniques competently and appropriately Selects appropriate resources and adapts work where necessary. Selects tools and techniques needed to shape, assemble and join materials they are using	Use a range of small tools, including scissors. Safely use and explore a variety of materials, tools and techniques experimenting with colour, design, texture, form, and function Experiments to create different textures.	Safely use and explore a variety of materials, tools and techniques

Billingshurst Primary School – Design and Technology Curriculum

Year 1 – Skills and Knowledge					
Designing/ Generating Ideas	**Making**	**Evaluation**	**Food and Nutrition**	**Construction**	**Mechanisms**
Think of own ideas for designs. Use pictures and words to plan. Design a product for myself, following design criteria.	Explain what is being made and why. Select appropriate tools and equipment for the purpose.	Talk about own and pre-existing products, sharing likes and dislikes. Say whether their product does what it is meant to (fits the design brief) and how it could be improved.	Know how to peel, cut, grate, mix and mould foods safely and hygienically (with close supervision). Measure using non-standard units. EG Fruit salads, sandwiches	Use sheet materials and construction tools with appropriate supervision. Cut materials safely using scissors. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques. Use wood to practise drilling, and nailing. <u>Technical knowledge</u> Build structures, exploring how they can be made stronger, stiffer and more stable.	To explore the movement of simple mechanisms such as levers, sliders, wheels and axels, for example a land yacht.

Billingshurst Primary School – Design and Technology Curriculum

Year 2 – Skills and Knowledge					
Designing/ Generating Ideas	**Making**	**Evaluation**	**Food and Nutrition**	**Construction**	**Textiles**
Think of own ideas and plan what to do next. Describe designs using pictures, diagrams, models, mock-ups, words and ICT. Design a product for myself and others, following design criteria.	Explain what is being made and why the audience will like it. Choose appropriate tools and equipment, describing and explaining why they are being used.	Describe how their own and pre-existing products work and how they were created, evaluating what went well and what could be done differently. Suggest what went well and what would be done differently when evaluating their own product.	Know how to peel, cut, grate, mix and mould foods safely and hygienically (with supervision). Measure or weigh using a cup or balance. Assemble ingredients and use hob to melt them. EG: Rocky road, flapjack	Use sheet materials and construction tools with appropriate supervision. Cut materials safely using scissors and other tools provided . Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen.) Use wood to practise cutting and screwing. <u>Technical knowledge</u> Build structures, exploring how they can be made stronger, stiffer and more stable.	Cut, then join textiles using a running stitch. Decorate using a range of items (buttons, sequins, beads, ribbons etc). EG: Coaster, tree decoration

Billingshurst Primary School – Design and Technology Curriculum

Year 3 – Skills and Knowledge					
Designing/ Generating Ideas	**Making**	**Evaluation**	**Food and Nutrition**	**Construction**	**Mechanisms**
Create a design that meets a range of requirements. Consider the equipment and tools needed when planning. Describe a design using an accurately labelled diagram, and in words.	Use a range of tools and equipment accurately. Measure, mark out, assemble and join materials and components with some accuracy.	Evaluate own and pre-existing products. Suggest what could be changed to improve a design, beginning to link this to the design brief.	Know how to peel, cut, grate, mix, mould and begin to cook foods hygienically (using toasters and microwaves with supervision). To select appropriate utensils, with support. Measure ingredients to the nearest gram accurately, using non-digital and digital scales. Follow a recipe with support. Assemble and cook ingredients, with support. Controlling the temperature of the oven or hob. EG: Cake / biscuit	Use sheet materials and construction tools with appropriate supervision. Cut materials accurately and safely by selecting appropriate tools. Measure and mark out to the nearest millimetre Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as cut outs). Select appropriate joining techniques such as sanding wood after cutting based on prior knowledge. Discuss up-cycling and repairing items Strengthen materials using suitable techniques. <u>Technical knowledge</u> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. EG: Propeller cars

Billingshurst Primary School – Design and Technology Curriculum

Year 4 – Skills and Knowledge						
Designing/ Generating Ideas	**Making**	**Evaluation**	**Food and Nutrition**	**Construction**	**Textiles**	**Electricals**
Generate more than one idea for how to create a product. Gather information to help design a successful product (i.e. by asking others' views/ disabling products). Produce a detailed plan with labelled diagrams, a written explanation and step-by-step guide. Suggest improvements to develop and refine a planned idea. Apply prior knowledge to electronics.	Use a range of tools and equipment with accuracy. Measure, mark out, join, assemble materials and components with accuracy. Identify techniques used in construction.	Evaluate the appearance and usability of own and pre-existing products, giving reasons for choices. Explain how the original design could be improved, considering the appearance and usability and linking this to the design brief.	Know how to peel, cut, grate, mix, mould and begin to cook foods hygienically (using toasters and microwaves with supervision). To select appropriate utensils, independently. Independently, measure ingredients to the nearest gram accurately, using non-digital and digital scales. Create their own recipe based on prior knowledge of how to combine ingredients. Independent assemble and cook ingredients, controlling the temperature of the oven or hob. EG: Healthy, survival bar	Use sheet materials and construction tools with appropriate supervision. Cut materials accurately and safely by selecting appropriate tools. Measure and mark out to the nearest millimetre. Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots). Select appropriate joining techniques based on prior knowledge Discuss up-cycling and repairing items. Strengthen materials using suitable techniques <u>Technical knowledge</u> Apply their understanding of how to strengthen, stiffen and einforce more complex structures	With support make a template. Understand the need for a seam allowance, within the template. join textiles with appropriate stitching. Building prior knowledge, eg blanket or back stitch Select the most appropriate techniques to decorate textiles. EG: hand puppet	Make a circuit using battery, bulb and switch. Diagnose faults in battery operated devices(such as low battery, water damage or battery terminal damage).e.g topic related electric game.

Billingshurst Primary School – Design and Technology Curriculum

Year 5 – Skills and Knowledge					
Designing/ Generating Ideas	**Making**	**Evaluation**	**Food and Nutrition**	**Construction**	**Mechanisms**
Generate a range of ideas after collating relevant information (i.e. users' views). Produce a detailed plan, with step-by-step instructions, cross sectional diagrams and prototypes. Suggest alternative plans, considering the positive aspects and drawbacks of each.	Use a range of tools and equipment expertly. Consider the aesthetic qualities and functionality of my work when making.	Evaluate the appearance and function of a product (own and pre-existing) against the original criteria, saying whether it is fit for purpose. Suggest improvements that could be made, considering materials and methods that have been used.	Cut, mix, mould and begin to use hobs to heat food with appropriate supervision. To be introduced to the importance of correct storage and correct ingredients, using knowledge of micro-organism. For example: preserves, pickling, bottling, freezing. Measure accurately, with support, and calculate ratios of ingredients to scale up or down form recipe. Use 'rubbing in' techniques (pastry and crumble) and build on prior knowledge of cooking techniques. Create and refine recipes including ingredients, methods, cooking times and temperatures. EG: Make jam and jam tarts, fruit compote and crumble.	Use sheet and Construction materials appropriately. Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape) Show an understanding of the qualities of materials to choose appropriate tools to cut and shape. Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). <u>Technical knowledge</u> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.	To understand and use mechanical systems in their products, such as cams, pulleys gears, levers and linkages.

Billingshurst Primary School – Design and Technology Curriculum

Year 6 – Skills and Knowledge						
Designing/ Generating Ideas	**Making**	**Evaluation**	**Food and Nutrition**	**Construction**	**Textiles**	**Electricals**
Use a range of information to inform a design (i.e. market research using surveys, interviews, questionnaires, disabling a product or resources from the internet). Produce a detailed plan, with cross-sectional diagrams and computer generated designs. Work within constraints, refining and justifying plans as necessary. Apply prior knowledge to electronics.	Use a range of tools and equipment precisely. Consider the aesthetic qualities and functionality of my product as making it, refining details as necessary. Identify construction techniques. Ensure products have a high quality finish, using art skills where appropriate.	Evaluate the appearance and test the function of a product (own and pre-existing) against the original criteria, saying whether it is fit for purpose, giving reasons for choices. Suggest improvement that could be made, considering materials, methods, sustainability of the product and how much a product costs to make.	Cut, mix, mould and use hobs to heat food, Developing independence with this as appropriate. To select correct storage and correct ingredients, using knowledge of micro-organisms. For example: preserves, pickling, bottling and freezing. Measure accurately; calculate ratios of ingredients to scale up or down from recipe. Build on prior knowledge of cooking techniques. Create and refine recipes including ingredients, methods, cooking times and temperatures. Create and refine recipes including ingredients, methods, cooking times and temperatures. EG: Chutney, pickled vegetables.	Use sheet and construction materials appropriately. Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). Show an understanding of the qualities of materials to choose appropriate tools to cut and shape. Independently develop a product that uses a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). <u>Technical knowledge</u> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Pin and tack fabrics, use patterns and seam allowances and join fabrics to make quality products. Join textiles, using recycled clothing or material with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as comfort on a cushion). EG: Cushion, bag or pencil case.	Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). To apply their understanding of computing to program, monitor and control their products.

Billingshurst Primary School – Design and Technology Curriculum