# Netherfield Design and Technology Curriculum

Design and Technology is an inspiring, rigorous and practical subject. It can be found in many of the objects children use each day and is a part of children's immediate experiences. Design and Technology encourages children to learn to think and engage creatively to solve problems both as individuals and as members of a team.

At Netherfield Primary School, we aim to provide all children with a broad and balanced curriculum which prepares them for life beyond primary education. We intend to build a Design and Technology Curriculum that encourages children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, as well as considering their own and others' needs, wants and values.  We aim to build a Design and Technology curriculum which develops learning and results in acquiring knowledge and skills. Children will know more, remember more and understand more from the practical 'hands-on' experiences provided. We intend to design a Design and Technology Curriculum that incorporates appropriate subject knowledge, skills and understanding as set out in the EYFS Curriculum and The National Curriculum Design and Technology Programmes of study.

We aim to, wherever possible, link work to other disciplines such as Mathematics, Science, Engineering, Computing and Art. We want to encourage children to become innovators and risk-takers. At Netherfield Primary, we strive to teach high-quality Design and Technology Education that contributes to the creativity, culture, health and well-being of all pupils.

At Netherfield Primary School, the 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, skills and vocabulary 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.

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| | Design | Make | Evaluate | Technical Knowledge |
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| Year 6 | • To use my own experiences to help them design a purposeful and appealing product for myself and others based on a criterion.<br>• By looking at and evaluating existing products to show that I understand their form and function.<br>• Evaluate how effectively I have used my sources of information. | • Use a variety of materials/components with some accuracy.<br>• select from and use a wider range of materials and components.<br>• Work with a range of tools, materials and equipment with some precision.<br>• Test and evaluate my work, comparing it to my design specification (spec.) | • Evaluate how effectively I have used my sources of information.<br>• Test and evaluate my work, comparing it to my design specification (spec. | • I identify ways of improving my finished products.<br>• With a range of equipment showing that they understand their working characteristics.<br>• Apply their understanding of computing to program, monitor and control their products.<br>• understand and use electrical systems in my products [for example, series circuits incorporating switches, bulbs, buzzers and motors] |
| Year 5 | • To use my own experiences to help them design a purposeful and appealing product for myself and others based on a criterion.<br>• Gather and use research to help me design and think about who will use my design to include their opinions/needs.<br>• Evaluate and develop my ideas by annotating.<br>• Work from my own detailed plan and change it when needed. | • Use a variety of materials/components with some accuracy.<br>• Work with a range of tools, materials and equipment with some precision.<br>• select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic<br>• qualities | • Test and evaluate my work, comparing it to my design specification (spec.<br>• Check and measure my work as it develops and correct errors. | • Work with a range of tools, materials and equipment with some precision.<br>• Pay attention to quality of finish when making.<br>• Test and evaluate their work, comparing it to their design specification (spec.<br>• Apply my understanding of computing to program, monitor and control their products.<br>• Understand and use mechanical systems in my products [for example, gears, pulleys, cams, levers and linkages] |
| Year 4 | • To use my own experiences to help them design a purposeful and appealing product for myself and others based on a criterion.<br>• Gather and use research to help me design.<br>• Use appropriate vocabulary to explain what I need to do and use.<br>• Create a realistic plan and specify some of the limitations when designing, eg. Time and cost.<br>• Show different ideas using words, sketches and models. | • Make my product work well (function).<br>• Choose and use a range of tools, equipment and techniques.<br>• Use a variety of materials /components with some accuracy.<br>• 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 and develop my ideas by annotating.<br>• Evaluate my design, and how well I worked, to say what I changed and improved as I went along. | • Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.<br>• Pay attention to quality of finish when making.<br>• understand and use electrical systems in my products [for example, series circuits incorporating switches, bulbs, buzzers and motors] |
| Year 3 | • Draw, model and describe my ideas.<br>• Annotate my designs to explain details.<br>• Use my experience, and things I know about products to help me design.<br>• List things my design needs to do in a specification.<br>• To use my own experiences to help them design a purposeful and appealing product for themselves and others based on a criterion.<br>• Design a product using a design specification or criteria.<br>• Explain and annotate my designs.<br>• Use appropriate vocabulary to explain what I need to do and use.<br>• Write a realistic plan for making. | • Choose what tools/materials/techniques to use and use them with some accuracy.<br>• Cut, shape and put things together when making.<br>• Make my product work well (function). | • Plan what to do next.<br>• Think ahead about how to make my design and in what order.<br>• Evaluate my design, and how well I worked, to say what I changed and improved as I went along.<br>• Specify who will use my design and consider their needs/opinions. | • Apply my understanding of how to strengthen, stiffen and reinforce more complex structures. |
| Year 2 | • To use my own experiences to help them design a purposeful and appealing product for themselves and others based on a criterion.<br>• Design a product using a design specification or criteria.<br>• To generate and develop my ideas through mock ups and where appropriate, information technology.<br>• To identify the purpose of what they intend to make.<br>• Draw and annotate my design.<br>• Create a realistic plan for making.<br>• Use appropriate vocabulary to explain what I need to do and use.<br>• Think ahead about my design and what I may need to create and make it. | • Select from a range of tools and equipment to perform practical tasks [for<br>• example, cutting, shaping, joining and finishing]<br>• I can use a range of tools accurately and safely.<br>• Select from a range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.<br>• Use a range of materials according to their characteristics against my design criteria. | • To explore and evaluate a range of existing products.<br>• Children discuss their own products, what worked well and what can be improved for next time.<br>• Children comment on the products made by their peers.<br>• Children evaluate their ideas and finished products against the design criteria. | • Use the basic principles of a healthy and varied diet to prepare dishes<br>• Understand where food comes from.<br>• Use key vocabulary when discussing their design and in the process of making.<br>• build structures, exploring how they can be made stronger, stiffer and more stable |
| Year 1 | • Develop my ideas through talking.<br>• Explain what I am making.<br>• Explain which tools I need to use<br>• Explain what I want to do- using word and pictures.<br>• Communicate ideas through talking, drawing and templates.<br>• Discuss and create a plan for what I am making.<br>• Learn and use keys words for a topic. | • With support, choose the appropriate tools to complete a task.<br>• Use the appropriate tool to perform a task.<br>• Use tools safely to complete a task.<br>• Cut and shape materials.<br>• Combine and join materials together. | • Talk about my work and what I did to other people.<br>• Use the keywords they have learnt to describe what they did and how they did it (I use scissors to cut, I used split pins to join).<br>• Evaluate my design, and how well I worked, to say what I changed and improved as I went along. | • Use the basic principles of a healthy and varied diet to prepare dishes<br>• Understand where food comes from.<br>• Can describe how things work.<br>• Describe products I know about which are like my design.<br>• Choose what tools/material/technique to use and use with some accuracy. |
| EYFS | • Know that ideas are the 1st step in the making process.<br>• Know that a product can be made from a plan. | • Know primarily through their own experiences that tools and materials can be safely used to make things | • Know that creations may or may not meet initial expectations. Know that a simple | • Know that there are healthy and unhealthy foods<br>• EYFS begin to develop a food vocabulary using taste, smell, texture |

| | | evaluation can be used to improve a products | | and feel. |

| | Textiles | Food | Structures | Mechanisms and Electrical Systems |
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| Year 6 | • Children can pin and tack fabric pieces together.<br>• Use a variety of stitches e.g. over sewing, back stitch, blanket stitch<br>• Make quality products with increasing accuracy and independence<br>• Understand seam allowance<br><br>Outcome: Collaborative textile project | • Know how to prepare and cook a variety or predominantly savoury dishes safely and hygienically, where appropriate, using a heat source.<br>• To know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.<br>• Become increasingly skilled at peeling, chopping, slicing, spreading, grating, mixing, kneading and baking.<br><br>Outcome: Pasta and sauce | | Electrical Systems<br>• To include a motor in an electrical system.<br>• Create series and parallel circuits.<br>• Create circuits using a number of components such as LED's, resistors, transistors and chips.<br>• To apply their understanding of computing to program, monitor and control their products.<br><br>Outcome: an electrical vehicle |
| Year 5 | | • Understand that seasons may affect the food available.<br>• Understand how food is processed into ingredients that can be eaten or used in cooking.<br>• To explore recipes can be adapted to change the appearance, taste, texture and aroma.<br>• Gain confidence in the skills of peeling, chopping, slicing, spreading, grating, mixing, kneading and baking.<br><br>Outcome: Pizza | • Build innovative, functional, appealing frame structures that are fit for purpose.<br>• Communicate ideas through annotated sketches, cross sectional and exploded diagrams.<br>• Use a range of tools to mark positions and attach materials (e.g. bradawl, hand drill)<br>• Evidence how products can be made stronger and more stable.<br>• Use finishing techniques to strengthen and improve the appearance of their models.<br>Outcome: Bird Hide prototype | Mechanisms<br>• To understand how cams, pulleys and gears create movement.<br>• Create mechanical systems using cams, pulleys and gears.<br>• Use prototypes.<br>• Use the vocabulary pulley, drive belt, gear, rotation, spindle, driver, follower.<br><br>Cam class project |
| Year 4 | • Children are able to join fabrics using a range of stitches with increasing independence.<br>• They learn how to add further decoration to their work using buttons, beads, sequins etc.…<br>• Children use some elements of embroidery to embellish their work<br>• Children are able to use a pattern and are introduced to making a prototype of a product.<br>• Sewing skills are becoming more accurate.<br>• Children practise embroidery, pattern and oversew.<br><br>Outcome: Mobile phone holder | • Understand that food is grown, reared and caught in the UK, Europe and the wider world.<br>• Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically.<br>• To know that to be active and healthy, food and drink are needed to provide energy for the body.<br>• Further develop skills including mixing, kneading and baking.<br><br>Outcome: Bread | | Electrical Systems<br>• To incorporate a circuit into a model.<br>• Use switches, bulbs and buzzers.<br>• Use ICT to control products.<br>• To diagnose faults in battery operated devices ( such as low battery, water damage, battery terminal damage)<br>• To use the vocabulary- circuit, push to break switch, input device, output device.<br><br>Outcome: Torches |
| Year 3 | | • Begin 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.<br>• 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.<br>• Be able to use a range of techniques such as peeling, chopping, spreading, slicing and grating.<br><br>Outcome: Stone Age Stew | • Build shell structures with increasing independence and accuracy.<br>• Strengthen frames with diagonal struts.<br>• Measure and mark square section strip and dowel accurately to 1cm.<br>• Tools- Scissors, masking tape, glue, hole punches, treasury tags, vice, junior hacksaw, glue gun (with supervision)<br>• Explore the vocabulary and techniques- girder, rafter , strut, laminating, corrugating, ribbing<br>• Begin to demonstrate a growing understanding of how to reinforce and strengthen their finished products.<br>• Make structures more stable by giving them a wide base. | Mechanisms<br>• To begin to create mechanical systems using levers and linkages or pneumatics to create movement.<br>• To use the vocabulary input, process and output.<br><br>Outcome: Moving Monsters/Make a pneumatic toy |

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| Year 2 | • Children learn how to cut out shapes which have been created by drawing round a template onto the fabric.<br>• Children begin to sew using a range of basic stitches e.g. cross stitch & running stitch<br><br>Outcome: Explorer Compass Pouch | • Know that food has to be farmed, grown elsewhere (e.g. home) or caught.<br>• Understand how to name the five groups in 'the eat well plate.'<br>• To know that a healthy diet comprises of food and drinks from each of the food groups.<br>• Begin to use techniques such as cutting, peeling and grating.<br><br>Outcome: Pasta salad | • Build structures with more independence.<br>• Exploring how they can be made stronger, stiffer and more stable.<br><br>Outcome: Ferris Wheel | Mechanisms<br>• With some independence explore and use winding mechanisms.<br>• Begin to incorporate wheels and axles into products by attaching a wheel to a chassis using an axle.<br>• Construct a simple slider independently.<br>• Make a lever by joining card with paper fasteners<br><br>Outcome: Ferris Wheel |
| Year 1 | • Children learn how to weave with a range of different materials<br><br>Outcome: Woven materials | • Begin to understand that all food comes from plants or animals.<br>• Prepare simple dishes safely and hygienically, without using a heat source.<br>• Begin to develop children's peeling and chopping skills.<br><br>Outcome: Fruit Salad | • Use construction kits to build walls, towers and frameworks.<br>• Experience different methods of joining card.<br>• Make simple drawings.<br>• Talk and discuss ideas.<br>• With support, select materials.<br><br>Outcome: Building a tower | Mechanisms<br>• With some support begin to explore and use simple mechanisms.<br>• Explore how to make a simple flap or hinge.<br>• Use a slider in a moving picture.<br>• Construct a simple lever with support.<br>• To use the vocabulary slider, lever, pivot, slot<br><br>Moving Picture Book |
| EYFS | • Children learn how to join fabrics using gluing.<br>• Chn learn how to decorate using a range of items (buttons, sequins, beads, ribbons etc). | • Begin to develop a food vocabulary using taste, smell, texture and feel.<br>• They start to think about the need for a variety of foods in a diet. | • Build structures with a range of materials inside and out | Mechanisms<br>• Make simple split-pin mechanisms.<br>• Use scissors to cut straight and curved edges.<br>• Use hole punches to punch holes.<br>• Use paper fasteners and masking tape to join paper and card |