**Design Technology Progression Map**

**Nursery**

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| **Design Technology** |
| **Development matters**  **Children will start to:**   * Explore with block play – designing, building and constructing * Create with open ended resources- fabric, shells, feathers, blocks, card, paper * Engage in open end, large scale projects, using a range of interesting, stimulating and different materials * Extend ideas through discussion using how and why things happen and what might happen next * Come up with their own ideas and explanations * Use and build vocabulary related to their exploration * Change materials from one state to another through cooking * Learn from craftspeople and visitors, widening the range of ideas they can draw on |
| ***Key Vocabulary:***  *Build, join, stick, f*ix, *Sellotape*, *glue, explore, investigate, materials, blocks, cook* |

**Reception**

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| **Design Technology** |
| Creating with Materials ELG  **Children at the expected level of development will:**  Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form, and function;  Share their creations, explaining the process they have used;  Make use of props and materials when role playing characters in narratives and stories.  **Food and Nutrition**   * Begin to understand some food preparation tools, techniques and processes. * Practise stirring, mixing, pouring, blending. * Discuss how to make an activity safe and hygienic. * Discuss use of senses. * Understand need for variety in food. * Begin to understand that eating well contributes to good health   **Design**   * 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.)   **Make**   * Construct with a purpose, using a variety of resources. * Use simple tools and techniques * Build / construct with a wide range of objects. * With support, begin to incorporate moving parts into models eg split pins to make body parts move. * Select tools & techniques to shape, assemble and join. * Replicate structures with materials / components. * Discuss how to make an activity safe and hygienic. * Record experiences by drawing, writing, voice recording. * Understand different media can be combined for a purpose.   **Evaluate**   * Adapt work if necessary. * Dismantle, examine, talk about existing objects/structures. * Consider and manage some risks. * Practise some appropriate safety measures independently. * Talk about how things work. * Look at similarities and differences between existing objects / materials / tools. * Show an interest in technological toys. * Describe textures. |
| **Key Vocabular*y:***  *Build, construct, join, tools, cook, recipe, how, why, explore* |
| **Scissor Development**  **Holds Scissors:**  Between the ages of 1.5 – 2 years old, a child learns to hold scissors, often using both hands to open and close the blades.  **Open/ Closes Scissors:**  At ages 2 – 2.5 years old, a child learns how to open and close the scissors. They are NOT ready to use them with paper. This is a good time to practice using play dough, modelling clay, or continue tearing paper. Always encourage a ‘thumbs up’ position whilst holding the scissors.  **Snips Paper**  Once the child has mastered opening and closing the scissors, they can move on to making small snips on the paper. They are not moving forwards on the paper, just making snips. This can happen soon after or around the time they begin to open and close the scissors.  **Snips paper Moving Forward**  By the time a child reaches 3, they should e able to make snips on the paper while moving the scissor forward across the paper.  **Uses Helping Hand**  Between 3 to 3.5 years old, a child begins to use their ‘helping hand’ or non dominate hand to hold the paper and help manipulate it while cutting with their dominant hand.  **Cuts Straight Line**  By 3 – 3.5 years, a child should be able to move the scissors along a straight lien that is 6 inches long., Their accuracy is still a work in progress, with most cutting within ½ inch of the cutting line. By the age of 4, their accuracy will improve cutting within a ¼ inch of the cutting line.  **Cuts curved line**  By age 4, a child should be able to cut on a curved line that is ¼ inch wide, stauing within ¼ inch of the cutting line.  **Cuts Circle Shape**  Also by the age of 4, once a child has mastered curved lines, they should be able to take on circle shapes of at least 6 inches diameter.  **Cuts Square Shapes**  Between the ages of 4.5 and 5 years old, a child should be able to cut a square shape within a ¼ inch from the cutting lin.  **Cuts Complex Shapes**  Between the age of 5-6, a child should be able to cut more complex shapes such as figures. |

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| **National Curriculum – Design Technology** | |
| **Purpose of study**  Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others’ needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation. | |
| **Aims**  **The national curriculum for Design 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. | |
| **National Curriculum Objectives** | |
| **KS1** | **KS2** |
| **Pupils should be taught:**  Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to:  **Design**  ♣ design purposeful, functional, appealing products for themselves and other users based on design criteria  ♣ generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology  **Make**  ♣ select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]  ♣ select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics  **Evaluate**  ♣ explore and evaluate a range of existing products  ♣ evaluate their ideas and products against design criteria  **Technical knowledge**  ♣ build structures, exploring how they can be made stronger, stiffer and more stable  ♣ explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.  **Cooking and nutrition**  As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.  ♣ use the basic principles of a healthy and varied diet to prepare dishes  ♣ understand where food comes from | **Pupils should be taught:**  Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:  **Design**  ♣ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups  ♣ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design  **Make**  ♣ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately  ♣ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities  **Evaluate**  ♣ investigate and analyse a range of existing products  ♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work  ♣ understand how key events and individuals in design and technology have helped shape the world  **Technical knowledge**  ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures  ♣ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]  ♣ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]  ♣ apply their understanding of computing to program, monitor and control their products.  **Cooking and nutrition**  As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.  ♣ 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. |

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| **Knowledge and Skills** | | | |
|  | **KS1** | **LKS2** | **UKS2** |
| **Design, Make, Evaluate and Improve** | **Children should be able to:**  **Year 1:**   * Design products that have a clear purpose and an intended user. * Have own ideas. * Explain what I want to do. * Explain what my product is for, and how it will work – can I explain my plan to others? * Use pictures and words to plan, begin to use models. * Design a product for myself following design criteria. * Research similar existing products. * Explain what I’m making and why. * Consider what I need to do next. * Select tools/equipment to cut, shape, join, finish and explain choices. * Measure, mark out, cut and shape, with support. * Choose suitable materials and explain choices. * Try to use finishing techniques to make product look good. * Work in a safe and hygienic manner. * 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. * Talk about existing products, and say what is and isn’t good. * Talk about things that other people have made. * Begin to talk about what could make product better.   **Year 2:**   * Make products, refining the design as work progresses. * 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. * Use knowledge of existing products to produce ideas. * Explain what I am making and why it fits the purpose. * Make suggestions as to what I need to do next. * Join materials/components together in different ways. * Measure, mark out, cut and shape materials and components, with support. * Describe which tools I’m using and why. * Choose suitable materials and explain choices depending on characteristics. * Use finishing techniques to make product look good. * Work safely and hygienically. * 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 existing products are. * Talk about what I would do differently if I were to do it again and why. | **Children should be able to:**  **Year 3:**  • Design with purpose by identifying opportunities to design.  • Make products by working efficiently (such as by carefully selecting materials).  • Refine work and techniques as work progresses, evaluating the end product design.  **Year 4:**  • Design with purpose by identifying opportunities to design.  • Make products by working efficiently  • Refine work and techniques as work progresses, continually evaluating the product design.  • Use software to design and represent product designs. | **Children should be able to:**  **Year 5:**  • Design with the user in mind, motivated by the service a product will offer.  • Make products through stages of prototypes, making continual refinements.  • Ensure products have a high quality finish, using art skills where appropriate.  **Year 6:**  • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).  • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. |
|  | ***Build upon prior vocabulary and:***  *Design Technology, Plan, Equipment, Data, Information*  *Test, Construct, Packaging, Label, Tools, Technology*  *Environment, Self- Evaluation, Improve, Modify, Procedures, plan, mind map, shape, sketch* | ***Build upon prior vocabulary and:***  *Design, Designer, Brief, Product, User, Technology, disassembly, graphics, mind map, components list, enlarged view, function, graphics, opaque, perspective, drawing,* | ***Build upon prior vocabulary and:***  *Annotated, diagram, cross section, design process, enlarged view, mock up, modify, proportion, risk assessment, specification, stable, tessellations, aesthetics, product analysis, prototype* |
| Taking Inspiration from Design Throughout History | **Children should be able to:**  **Year 1:**  • Explore objects and designs to identify likes and dislikes of the designs.  • Suggest improvements to existing designs.  **Year 2:**  • Explore objects and designs to identify likes and dislikes of the designs.  • Suggest improvements to existing designs.  • Explore how products have been created. | **Children should be able to:**  **Year 3:**  • Identify some of the great designers in all of the areas of study to generate ideas for designs.  • Improve upon existing designs, giving reasons for choices.  **Year 4:**  • Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.  • Disassemble products to understand how they work. | **Children should be able to:**  **Year 5:**  • Combine elements of design from a range of inspirational designers throughout history.  • Create innovative designs that improve upon existing products.  **Year 6:**  • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.  • Evaluate the design of products to suggest improvements to the user experience. |
| **Cooking and Nutrition** | **Children should be able to:**  **Year 1**   * Cut ingredients safely and hygienically. * Assemble or cook ingredients. * Describe textures. * Wash hands & clean surfaces. * Think of interesting ways to decorate food. * Say where some foods come from, (i.e. plant or animal). * Describe differences between some food groups (i.e. sweet, vegetable etc.) * Discuss how fruit and vegetables are healthy. * Cut, peel and grate safely, with support.   **Year 2**   * Cut, peel or grate ingredients safely and hygienically. * Measure or weigh using measuring cups or electronic scales. * Explain hygiene and keep a hygienic kitchen. * Describe properties of ingredients and importance of varied diet. * Say where food comes from (animal, underground etc.) * Describe how food is farmed, home-grown, caught. * Draw eat well plate; explain there are groups of food. * Describe “five a day”. * Name and sort foods into the five groups of the Eatwell Guide   **Key Questions:**   * Can they cut food safely? * Can they describe the textures of food? * Can they describe the properties of the ingredients they are using? * Do they wash their hands and make sure the surfaces are clean? Can they explain what hygienic means? * Can they think of interesting ways of decorating food they have made? | **Children should be able to:**  **Year 3**  • Prepare ingredients hygienically using appropriate utensils.  • Measure accurately.  • Follow a recipe.  • Assemble or cook ingredients  **Year 4:**  • Prepare ingredients hygienically using appropriate utensils.  • Measure ingredients to the nearest gram.  • Assemble and cook ingredients (with adult support, controlling the temperature of the oven or hob, if cooking).  **Key Questions:**   * Can they choose the right ingredients for a product? * Can they use equipment safely? * Do children know what to do to be hygienic and safe? * Can they make sure their product looks attractive? * Do they understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body? * Can they describe how their combined ingredients come together? * Can they set out to grow plants such as cress and herbs from seeds with the intention of using them for their food product? | **Children should be able to:**  **Year 5:**  • Understand the importance of correct storage and handling of ingredients (knowledge of micro-organisms).  • Demonstrate a range of baking and cooking  techniques.  **Year 6**  • Measure accurately and calculate ratios of ingredients to scale up or down from recipe.  • Create and refine recipes, including ingredients, methods, cooking times and temperatures.  **Key Questions:**   * Do children know what to do top be hygienic and safe? * Can they explain how their product should be stored with reasons? * Can they set out to grow their products with a view to making salad, taking account of the time required to grow different foods? |
|  | ***Build upon prior vocabulary and:***  *Apron, bake, beat, boil, grill, recipe, design, instruction, ingredient list* | ***Build upon prior vocabulary and:***  *Year 3: Baking sheet, baste, dice, roast,*  *Ingredients, Hygiene, Balanced, Nutritious,*  *World foods, apron, beat, bake, boil*  *Year 4: Grown, Reared, Local produce,*  *Dough, Knead, chopping board, can opener* | ***Build upon prior vocabulary and:***  *Year 5: Bake, Fry, Spices, Texture,*  *Mexican cuisine, grill, knead, baking sheet, baste*  *Year 6: Cross-contamination,*  *Local produce, Alternative dish, Cooking technique,*  *Seasonality, Hygienic* |
| **Materials** | **Children should be able to:**  **Year 1:**  • Cut materials safely using tools provided.  • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).  **Year 2**  • Measure and mark out to nearest cm.  • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).  **Key Questions:**   * Can they make a structure/ model using different materials? * Is their work tidy? * Can they make their model stronger if it needs to be? * Can they measure materials to use in a model or structure? * Can they join materials in different ways? * Can they use joining, folding or rolling to make it stronger? | **Children should be able to:**  **Year 3:**  • Cut materials accurately and safely by selecting appropriate tools.  • Select appropriate joining techniques.  **Year 4:**  • Measure and mark out to the nearest mm.  • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).  **Key Questions:**   * Do they use the most appropriate resources? * Can they work accurately to make cuts and holes? * Can they join materials? * Can they measure carefully so as to make sure they have not made mistakes? * How have they attempted to make their product strong? * Can they use a range of advanced techniques to shape and mould? * Do they use finishing techniques, showing an awareness of audience? | **Children should be able to:**  **Year 5:**  • 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).  **Year 6:**  • Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (e.g. the nature of fabric may require sharper scissors than would be used to cut paper).  **Key Questions:**   * Are their measurements accurate enough to ensure that everything is precise? * How have they ensured that their product is strong and fit for purpose? * Can they justify why they have selected specific materials? * Can they hide joints so as to improve the look of their product? * Are they motivated enough to refine and further improve their product using mouldable materials? * Can they justify design in relation to the audience? |
|  | ***Build upon prior vocabulary and:***  *Fold, pattern, measure, paper clip, metal, Sellotape, cotton, build, model, join, design* | ***Build upon prior vocabulary and:***  *Mountain fold, template, research, hessian, wire, wood wool, wheel, plasticine, art straw, clay, parts list, flexible, screw, PVA, saw, crocodile clip, polystyrene, brass, bolt, glue gun, hole punch* | ***Build upon prior vocabulary and:***  *design, compass, protractor, stencil, equipment, final design, landscape, portrait, engineering, modelling, perspective, primary source, secondary source, translucent, transparent, aluminium, bolt, brass, calico, polystyrene, pulley, silk, abrasive, acrylic, adhesive, hardwood, plywood,* |
| **Construction/ Structures** | **Children should be able to:**  **Year 1:**   * Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. * Begin to measure and join materials, with some support. * Describe differences in materials. * Suggest ways to make material/product stronger.   **Year 2:**   * Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. * Measure materials. * Build simple structures, exploring how they can be made stronger, stiffer and more stable * 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.   **Key Questions:**   * Can they talk with others about how they want to construct their product? * Can they select appropriate resources and tools for their building projects? * Can they make simple plans before making objects eg drawings, arranging pieces of construction before building? | **Children should be able to:**  **Year 3:**  • Choose suitable techniques to construct products or to repair items.  **Year 4:**  • Strengthen materials using suitable techniques.  **Key Questions:**   * Do they use the most appropriate resources? * Can they work accurately to make cuts and holes? * Can they join materials? * Can they measure carefully so as to make sure they have not made mistakes? * How have they attempted to make their product strong? * Can they use a range of advanced techniques to shape and mould? * Do they use finishing techniques, showing an awareness of audience? | **Children should be able to:**  **Year 5:**  • Develop a range of practical skills to create products (e.g cutting, drilling and screwing, nailing, gluing, filling and sanding).  -Build innovative, functional, appealing structures that are fit for purpose.  -Evidence how products can be made stronger and more stable.  -Use finishing techniques to strengthen and improve the appearance of their models.  **Year 6:**  • Develop a range of practical skills to create products.  -Build innovative, functional, appealing structures that are fit for purpose with increasing independence and ability.  -Demonstrate confidently how to reinforce and strengthen a 3D framework  **Mastery: By the time pupils leave Gagle Brook:**   * Independently and skilfully build high quality structures that are innovative, functional, appealing and stable * Finished products are of a particularly high standard.   **Key Questions:**   * Are their measurements accurate enough to ensure that everything is precise? * How have they ensured that their product is strong and fit for purpose? * Can they justify why they have selected specific materials? * Can they hide joints so as to improve the look of their product? * Are they motivated enough to refine and further improve their product using mouldable materials? * Can they justify design in relation to the audience? |
|  | ***Build upon prior vocabulary and:***  *build, model, join, design* | ***Build upon prior vocabulary and:***  *Mechanism, Lever, Linkage, Fixed pivot, Girder, rafter, strut*  *Loose pivot, Net, Score, Tab, hammer*  *Graphic design, Shelf-appeal, stable, rigid, structure,* | ***Build upon prior vocabulary and:***  *Green house, Frame structure, Triangulation,*  *Reinforce, Agricultural engineering, cross brace, cantilever* |
| **Textiles** | **Children should be able to:**  **Year 1:**   * Shape textiles using templates. * Colour and decorate textiles * Measure, cut and join textiles to make a product, with some support. * Choose suitable textiles.   **Year 2**   * Join textiles using running stitch. * Colour and decorate textiles using a number of techniques * 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.   **Key Questions:**   * Can they describe how different textiles feel? * Can they make a product from textiles by gluing? * Can they measure textiles? * Can they join textiles together to make something? * Can they cut textiles? * Can they explain why they chose a certain textile? | **Children should be able to:**  **Year 3:**  • Understand the need for a seam allowance.  • Join textiles with appropriate stitching.  **Year 4:**  • Select the most appropriate techniques to decorate textiles  **Key Questions:**   * Can they join textiles of different types in different ways? * Do they think what the user would want when choosing textiles? Appearance and quality. * Have they thought about how to make their product strong? * Can they devise a template? * Can they explain how to join things in a different way? | **Children should be able to:**  **Year 5:**  • Create objects (such as a cushion) that employ a seam allowance.  • Join textiles with a combination of stitching techniques (e.g. back stitch for seams and running stitch to attach decoration).  **Year 6:**  • Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).  **Mastery: By the time pupils leave Gagle Brook:**   * Make quality products, evidencing a range of textile skills.   **Key Questions:**   * Do they think what the user would want when choosing textiles? * How have they made their product attractive and strong? * Can they make a prototype first? * Can they use a range of joining techniques? * Have they thought about how their product could be sold? * Have they given considered thought about what would improve their product even more? |
|  | ***Build upon prior vocabulary and:***  *Sew, join, assemble, knot, tie,* | ***Build upon prior vocabulary and:***  *Pattern piece, Cross stitch, Applique,*  *Embroidery, Component, Design, Final Design, Template, appearance, calico, silk* | ***Build upon prior vocabulary and:***  *Back stitch, Seam allowance, Turn out,*  *Fashion designer, Ethical product, fibres, applique,* |
| **Mechanics** | **Children should be able to:**  **Year 1:**  • Explore and create products using levers, hinges, slides and wheels.  **Year 2:**   * Create products using winding mechanisms. * Use levers or slides. * Begin to understand how to use wheels and axles.   **Key Questions:**   * Can they make a product which moves? * Can they cut materials using scissors? * Can they add a design to their product? * Can they describe the materials using different words? * Can they say why they have chosen moving parts? | **Children should be able to:**  **Year 3:**  • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, linkages, winding mechanisms, pulleys and gears).  **Year 4:**  • Use scientific knowledge to choose appropriate mechanisms for a product  • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, linkages, winding mechanisms, pulleys and gears). | **Children should be able to:**  **Year 5:**  • Convert rotary motion to linear using cams.  **Year 6:**  • Use innovative combinations of electronics (or computing) and mechanics in product designs  -Design and make products with greater independence.  **Mastery: By the time pupils leave Gagle Brook:**   * Pupils are able to make quality products, evidencing a range of designing and making skills of a particularly high standard. * Pupils have an excellent understanding of a range of mechanisms. |
|  | ***Build upon prior vocabulary and:*** | ***Build upon prior vocabulary and:***  *Pulley****,*** | ***Build upon prior vocabulary and:***  *Mechanical system, Load, Transport,*  *Mechanical engineer, axle, chassis* |
| **Electricals and Electronics** | **Children should be able to:**  **Year 1:**  • Recognise if a battery operated device works or not.  **Year 2:**  • Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage). | **Children should be able to:**  **Year 3:**  • Create series circuits.  **Year 4:**  • Create parallel circuits.  **Key Questions:**   * Do they select the most appropriate tools and techniques to use for a given task? * Can they make a product which uses both electrical and mechanical components? * Can they use a simple circuit? * Can they use a number of components? * Can they add things to their circuits? * How have they altered their product after checking it? * Are they confident about trying out new and different ideas? | **Children should be able to:**  **Year 5:**  • Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).  **Year 6:**  • Create circuits using electronics kits that employ a number of components with increasing confidence.  **Key Questions:**   * Can they incorporate a switch into their product? * Can they use different kinds of circuit in their products? * Can they refine their product after testing it? * Can they incorporate hydraulics and pneumatics? |
|  | ***Build upon prior vocabulary and:*** | ***Build upon prior vocabulary and:***  *Year 3: Bulb, buzzer, circuit,*  *Year 4: Battery, Switch,*  *Electrical engineer* | ***Build upon prior vocabulary and:***  *Circuit, Monitor, Control, Program,*  *Electrical engineer* |