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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Pedagogical sequence:** Technical Knowledge and Understanding > Prior learning > Designing > Making > Evaluating | | | | | | | | | | |
| Developing, Planning and Communicating Ideas | | | | | | | | | | |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception | I am beginning to use the language of designing  I can verbally explain some features of my design | | | | I am learning how to plan and adapt initial ideas to make them better | | | |  | design plan, draw |
| Year 1 | I know how to draw on my own experience to help generate ideas  I understand what a target group is  I understand why research is important | | | | I am learning to suggest ideas and explain what I am going to do  I am learning to identify a target group for what I intend to design and make  I am learning to model my ideas in card and paper  I am learning to develop my design ideas, applying findings from my earlier research | | | |  | Model, target group, research |
| Year 2 | I know how to generate ideas by drawing on my own and other people's experiences | | | | I am learning to develop my design ideas through discussion, observation, drawing and modelling  I am learning to identify a purpose for what I intend to design and make  I am learning to identify simple design criteria  I am learning to make simple drawings and label parts | | | |  | Design criteria, prototype, working drawing |
| Year 3 | I understand why planning the order of my work before starting is important.  I know why a product needs a purpose and design criteria. | | | | I am learning to generate ideas for a product, considering its purpose and the user/s  I am learning to identify a purpose and establish criteria for a successful product.  I am learning to plan the order of my work before starting  I am learning to explore, develop and communicate design proposals by modelling ideas  I am learning to make drawings with labels when designing | | | |  | Design proposal, design specification, SketchUp specific vocabulary |
| Year 4 | I know the steps to develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail. | | | | I am learning to generate ideas, considering the purposes for which I am designing  I am learning to make labelled drawings from different views showing specific features  I am learning to evaluate existing products and identify criteria that can be used for my own designs | | | |  | Annotated sketch, SketchUp specific vocabulary |
| Year 5 | I know how to generate ideas through brainstorming and identify a purpose for their product  I understand how to use a specification  I know the steps to develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail | | | | I am learning to identify a suitable purpose for my product  I am learning to draw up a specification for my design  I am learning to use results of investigations, information sources, including ICT when developing design ideas | | | |  | Exploded diagram, SketchUp specific vocabulary |
| Year 6 | I understand how to create a specification  I know the most appropriate ways to model my ideas | | | | I am learning to communicate my ideas through detailed labelled drawings  I am learning to develop a design specification  I am learning to explore, develop and communicate aspects of my design proposals by modelling my ideas in a variety of ways  I am learning to plan the order of my work, choosing appropriate materials, tools and techniques | | | |  | SketchUp specific vocabulary |
| Working with tools, equipment, materials and components to make quality products (inc food) | | | | | | | | | | |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception | I can talk about basic food hygiene and safety procedures | | | | I am learning to construct my product with a simple purpose in mind  I am learning to use simple tools to shape, assemble and join materials together  I am learning to mix ingredients using simple utensils  I am learning to follow basic food safety and hygiene procedures | | | |  | Names of tools and materials necessary for project. |
| Year 1 | I know the best tools to use for a specific purpose  I can talk about basic food handling, hygienic practices and personal hygiene | | | | I am learning to make their design using appropriate techniques  I am learning to measure, mark out, cut and shape a range of materials  I am learning to use tools *eg scissors and a hole punch* safely  I am learning to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape  I am learning to select and use appropriate fruit and vegetables, processes and tools  I am learning to use basic food handling, hygienic practices and personal hygiene  I am learning to use simple finishing techniques to improve the appearance of their product | | | |  | Names of tools and materials necessary for project. |
| Year 2 | I can talk about safety when using hand tools  I know how to select tools and materials; use vocab to name and describe them  I know how to follow safe procedures for food safety and hygiene | | | | I am learning to measure, cut and score with some accuracy  I am learning to use hand tools safely and appropriately  I am learning to assemble, join and combine materials in order to make a product  I am learning to cut, shape and join fabric to make a simple garment. Use basic sewing techniques  I am learning to choose and use appropriate finishing techniques | | | |  | Names of tools and materials necessary for project. |
| Year 3 | I know how to select tools and techniques for making their product  I know how to work safely and accurately with a range of simple tools | | | | I am learning to yhink about their ideas as they make progress and be willing change things if this helps them improve their work  I am learning to measure, mark out, cut, score and assemble components with more accuracy  I am learning to demonstrate hygienic food preparation and storage  I am learning to iue finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT | | | |  | Names of tools and materials necessary for project. |
| Year 4 | I know how to select appropriate tools and techniques for making their product | | | | I am learning about appropriate tools and techniques  I am learning to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques  I am learning to use simple graphical communication techniques  I am learning to join and combine materials and components accurately in temporary and permanent ways  I am learning to measure, tape or pin, cut and join fabric with some accuracy  I am learning to sew using a range of different stitches, weave and knit | | | |  | Names of tools and materials necessary for project. |
| Year 5 | I know how to select appropriate materials, tools and techniques  I know how to use skills in using different tools and equipment safely and accurately  I know how to apply the rules for basic food hygiene and other safe practices *e.g. hazards relating to the use of ovens* | | | | I am learning to measure and mark out accurately  I am learning to weigh and measure accurately (time, dry ingredients, liquids)  I am learning to cut and join with accuracy to ensure a good-quality finish to the product | | | |  | Names of tools and materials necessary for project. |
| Year 6 | I know how to select appropriate tools, materials, components and techniques  I know how to use tools safely and accurately  I understand the processes required to achieve a quality product | | | | I am learning to assemble components and make working models  I am learning to make modifications as I go along  I am learning to construct products using permanent joining techniques  I am learning to pin, sew and stitch materials together create a product | | | |  | Names of tools and materials necessary for project. |
| Evaluating Processes and Products | | | | | | | | | | |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception | I can verbally explain what they like/dislike about their product | | | | I am learning to suggest one thing that they might change when creating a similar product | | | |  |  |
| Year 1 | I understand why evaluation is important | | | | I am learning to evaluate their product by asking questions about what they have made and how they have gone about it  I am learning to evaluate their product by discussing how well it works in relation to the purpose  I am learning to evaluate their products as they are developed, identifying strengths and possible changes they might make | | | |  | evaluate, |
| Year 2 | I can talk about their ideas, saying what they like and dislike about them | | | | I am learning to evaluate against their design criteria  I am learning to evaluate their products as they are developed, identifying strengths and possible changes they might make | | | |  |  |
| Year 3 |  | | | | I am learning to evaluate their product against original design criteria *e.g. how well it meets its intended purpose*  I am learning to disassemble and evaluate familiar products | | | |  | aesthetics, disassemble |
| Year 4 | I know about the appropriate tests needed to evaluate a product | | | | I am learning to evaluate their work both during and at the end of the assignment  I am learning to evaluate their products carrying out appropriate tests | | | |  |  |
| Year 5 | I know to evaluate it personally and seek evaluation from others | | | | I am learning to evaluate a product against the original design specification | | | |  |  |
| Year 6 | I know about the appropriate tests needed to evaluate a product and can use these on my product | | | | I am learning to evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests  I am learning to record their evaluations using drawings with labels  I am learning to evaluate against their original criteria and suggest ways that their product could be improved | | | |  |  |
| Textiles | | | | | | | | | | |
| Nursery | | Reception | Year 1 | Year 2 | | Year 3 | Year 4 | Year 5 | | Year 6 |
|  | | Templates and Joining | Templates and Joining | Templates and Joining | | 2D shape to 3D product | 2D shape to 3D product | Combining Different Fabric Shapes | | Combining Different Fabric Shapes |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception |  | | | | I am learning to join two pieces of material using one joining technique (i.e. gluing) | | | |  | join  *Two or more things made into one.*  sew  *Using a needle and a thread to join fabric.*  stick  *Use glue to join.* |
| Year 1 | I can use relevant vocabulary for the project  I know the names of simple fabric products (i.e. cushion, jumper, blanket)  I know why simple fabrics are chosen based on their properties (i.e. wool is used for a blanket because it is soft and warm) | | | | I am learning to understand what a template is  I am learning how a simple 3D textile product is made  I am learning how to join two pieces of fabrics using different joining techniques (gluing, stapling, stitching)  I am learning a range of finishing techniques available  I am learning how to follow relevant health and safety protocols | | | |  | pattern  *A repeated decoration or design.*  mark out  *Draw the shape or outline of something.*  decorate  *Make something look better.*  running stitch  *A straight-line stitch made by moving the needle up and down through the fabric.*  needle  *A sharp, pointed object used for sewing.*  fabric  *Cloth or material made from weaving or knitting.* |
| Year 2 | I can use technical vocabulary relevant to the project  I know the names of at least one designer of fabric products (i.e. Levi Strauss and denim jeans, William Morris - floral interior design patterns, Lucienne Day – links to WW2 and dress making)  I know where simple fabrics come from/are made of (i.e. wool from sheep, cotton from cotton plants, hessian made from fibres of jute plant)  I know what a design evaluation is | | | | I am learning why designers use templates  I am learning when to use certain fabrics based on their suitability to the product  I am learning how to use simple stitch techniques  I am learning which finishing technique to use depending upon the required effect  I am learning how to follow relevant health and safety protocols | | | |  | *template*  *A shape to draw around to get many of the same pieces.*  *features*  *The things that makes a product special or different.*  *dye*  *To give a fabric a different colour.*  *overstitch*  *Putting an additional stitch over an area that has already been stitched.*  *fray*  *Worn at the edge.*  *seam*  *The line where two pieces of fabric are sewn together.* |
| Year 3 | I know technical vocabulary relevant to the project  I know how different fabrics are constructed (i.e. woven materials, spun materials, knitted materials)  I know what a design brief is  I know what a prototype is  I know why designers evaluate their designs | | | | I am learning how to strengthen, stiffen and reinforce existing fabrics  I am learning how to securely join two pieces of fabric together using a range of stitches  I am learning why designers use patterns  I am learning what seam allowances are  I am learning how to follow relevant health and safety protocols | | | |  | compartment  *A section which is separate to the main container.*  finishing technique  *Techniques used to make the fabric feel or look better.*  prototype  *A 3-D model created from a design. A first attempt.*  back stitch  *A stitch sewn in a back and forth motion.*  felting  *Joining loose fibres by squashing and combing together.*  woven  *Interlocking threads of material to produce a fabric.*  knitted  *Loops of wool joined together by knitting needles or by a machine.*  bonded  *Joined securely to each other, usually by glue.* |
| Year 4 | I know technical vocabulary relevant to the project  I know what accuracy means and how it can be improved  I know what an annotated sketch is  I know why designers use prototypes  I know a range of designers who use fabrics in their work | | | | I am learning why designers might need to strengthen, stiffen and reinforce existing fabrics  T I am learning how/when to use decorative stitches to finish a product  I am learning what constitutes a renewable/sustainable material/fabric  I am learning how to follow relevant health and safety protocols | | | |  | aesthetics  *The way something looks.*  seam allowance  *The distance between the edge of the fabric and the stitching line.*  pinning  *Using straight pins to hold fabric together so it can be sewn.*  embroidery  *Decorative stitches to make a product look attractive. Sometimes uses beads, sequins or feathers.*  blanket stitch  *A strong stitch used traditionally to securely fasten the edge of blankets.*  cross stitch  *Using X shaped stitches, usually to create a pattern.* |
| Year 5 | I know technical vocabulary relevant to the project  I know what a questionnaire is and how it can help with product design (children could create a simple questionnaire which could then be used to form a design brief)  I know how to test fabrics in order to select them for use  I know how to analyse existing products and report what joining/fastening methods and multiple pieces have been used  I know some key dates in the development of fabric and textiles (i.e. 6000BC woven textiles used to wrap the dead, 500-1000AD spinning wheel invented in India, 1562 first use of purl stitch in Spanish tomb, 1890 first pair of jeans by Levi Strauss) | | | | I am learning that a 3D textile product can be made from a combination of accurately made pieces  I am learning when to combine multiple different fabrics to create a 3D product  I am learning how embroidery can embellish a product  T I am learning when to use particular stitch types (including finishing stitches)  I am learning how to follow relevant health and safety protocols | | | |  | specification  *The detailed explanation of exactly what to include.*  tacking  *Sewing together using a thin thread which can be easily snapped to be removed.*  working drawing  *sketches of the final garment which might include textile swatches.*  clasp  *A fastening which can be sewn on to a fabric.*  pinking shears  *Special scissors with saw-toothed blade to stop fabrics fraying.*  design criteria  *The really important goals that need to be achieved for a successful product.*  hem  *The edge of a piece of cloth that has been folded over and sewn.*  reinforce  *Strengthen/make stronger.*  stem stitch  *A thin line stitch which can create the outline for embroidered shapes.*  satin stitch  *A series of flat stitches which are very close together. Used to entirely cover an area.* |
| Year 6 | I know technical vocabulary relevant to the project  I know what a questionnaire is and how it can help with product design (children could create a simple questionnaire which could then be used to form a design brief)  I know how to test fabrics in order to select them for use  I know how to analyse existing products and report what joining/fastening methods and multiple pieces have been used  I know some key dates in the development of fabric and textiles (i.e. 6000BC woven textiles used to wrap the dead, 500-1000AD spinning wheel invented in India, 1562 first use of purl stitch in Spanish tomb, 1890 first pair of jeans by Levi Strauss) | | | | I am learning that a 3D textile product can be made from a combination of accurately made pieces  I am learning when to combine multiple different fabrics to create a 3D product  I am learning how embroidery can embellish a product  I am learning when to use particular stitch types (including finishing stitches)  I am learning how to follow relevant health and safety protocols | | | |  | applique  *One or more pieces of fabric attached to a background to create pictures or patterns.*  annotate  *Write around.*  innovation  *Producing new ideas, methods or designs.*  chain stitch  *An embroidery sewing technique in which a series of looped stitches form a chain like pattern.* |
| Electrical Systems | | | | | | | | | | |
| Nursery | | Reception | Year 1 | Year 2 | | Year 3 | Year 4 | Year 5 | | Year 6 |
|  | |  |  |  | | Simple Circuits and Switches | Simple Circuits and Switches | More Complex Switches | | More Complex Switches |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception |  | | | |  | | | |  |  |
| Year 1 |  | | | |  | | | |  |  |
| Year 2 |  | | | |  | | | |  |  |
| Year 3 | I know technical vocabulary relevant to the project  I know what electricity is and what it is used for  I know that some components have positive and negative terminals  I know simple commercial products that use electrical systems | | | | I am learning what an electrical circuit is  I am learning a range of simple electrical components and their functions, such as a bulb, buzzer and switch  I am learning how to control and program a product using computing (i.e. beebots)  I am learning how to construct a simple series circuit  I am learning how to make a range of simple secure connections (twisting wires together, wrapping ends, taping over, connecting block) | | | |  | User  *The person the product is aimed at. The person who uses it.*  fault  *Something that causes something to stop working correctly.*  toggle  *To switch between two different options.*  switch  *The button or lever used to turn something on or off.*  insulator  *A material that does not readily allow electricity to flow.*  conductor  *A material that does readily allow electricity to flow.*  battery holder  *The clip used to hold a battery in place.*  crocodile clip  *A metal clip used to make temporary connections in electrical circuits.*  component  *An individual part of a circuit.* |
| Year 4 | I know technical vocabulary relevant to the project  I know some simple conductors and insulators  I know how electricity is measured (volts and amps)  I know a range of places electrical systems are used (i.e. lighting in a house, display signs, traffic lights) | | | | I am learning what an electrical circuit is  I am learning a range of simple electrical components and their functions, such as a bulb, buzzer and switch  I am learning how to control and program a product using computing (i.e. beebots)  I am learning how to construct a simple series circuit  I am learning how to make a range of simple secure connections (twisting wires together, wrapping ends, taping over, connecting block) | | | |  | Series circuit  *A circuit where all the electricity flows through all components.*  push-to-make switch  *A switch which turns to an ‘on’ position when pressed.*  push-to-break switch  *A switch which turns to an ‘off’ position when pressed.*  appealing  *Attractive or interesting.*  control box  *Allows you to operate and monitor an electrical system.*  input device  *Any device that sends data to a computer.*  output device  *A device that receives data from a computer and turns it into something we can make sense of.*  system  *Many components linked together to perform a task or action.* |
| Year 5 | I know technical vocabulary relevant to the project  I know why materials make good conductors and insulators  I know how electrical systems are controlled (i.e. flow charts) | | | | I am learning how to incorporate simple self-made switches in a circuit  I am learning how to test components in more complex circuits (series and parallel)  I am learning how simple switches can be made  I am learning how to assess faults in their own electrical systems  I am learning how to test components in a simple series circuit | | | |  | Parallel circuit  *A circuit where the electric current splits between branches.*  light emitting diode (LED)  *Gives off light when electricity flows through it.*  Flowchart  *A picture showing the steps of a process in order.*  design specification  *A document that shows what a product should contain or look like.*  reed switch  *A switch that is turned on or off using magnetism.*  tilt switch  *A switch that turns on or off at a certain angle.* |
| Year 6 | I know technical vocabulary relevant to the project  I know why materials make good conductors and insulators  I know how electrical systems are controlled (i.e. flow charts) | | | | I am learning how to incorporate simple self-made switches in a circuit  I am learning how to test components in more complex circuits (series and parallel)  I am learning how simple switches can be made  I am learning how to assess faults in their own electrical systems  I am learning how to test components in a simple series circuit | | | |  | light dependent resistor (LDR)  *Changes resistance according to light.*  interface control document  *Describes all the inputs and outputs of a single system.*  micro switch  *A small, very sensitive switch that requires little force to operate.*  latching switch  *A switch which is operated by the user and will not turn off until the user turns it off.* |
| Mechanisms | | | | | | | | | | |
| Nursery | | Reception | Year 1 | Year 2 | | Year 3 | Year 4 | Year 5 | | Year 6 |
|  | | Wheels and Axels | Wheels and Axels | Sliders and Levers | | Levers and Linkages | Levers and Linkages | Pulleys and Gears | | Pulleys and Gears |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception | I know a product that has wheels | | | | I am learning objects on wheels can be moved by pulling or pushing  I am learning how a wheel fits on to an axle | | | |  | car  *something people use to travel in.*  wheel  a round  pull  push |
| Year 1 | I know simple commercial products that use wheels and axles to move  I know the difference between pulling and pushing forces  I know which materials are best used for particular components (i.e. rubber covered wheels might provide more grip than plastic wheels) | | | | I am learning what wheels, axles and axle holders are  I am learning the difference between fixed and free moving axles I am learning simple methods to fix wheels and axles to a product  I am learning the names of some simple tools and their purpose | | | |  | axle  *the thing the wheels are attached to.*  fixed  *Doesn’t move.*  design  *A drawing to show what something will look like.*  cutting  *taking away parts you do not need.*  joining  *making two – or more - separate things into one item.*  hacksaw  *a tool used to cut wood or metal.*  vice  *used to tightly hold something when cutting it.*  dowel  *round pieces of wood used for axles or to join wood together.*  cab  *the driver’s part of a lorry or train.* |
| Year 2 | I know where sliders and levers are used in real life context | | | | I am learning how to operate sliders and levers  I am learning that different mechanisms create different types of movement  I am learning the name of simple tools and their purpose  I am learning some simple fixing techniques and when to use them (i.e. masking tape to secure a lollipop stick slider)  I am learning what a pivot is | | | |  | mechanism  *Parts working together as one.*  lever  *A bar which moves around a pivot.*  slider  *A bar which moves through a slot.*  pivot  *The central point around which a bar moves in a mechanism.*  bridge  *A small strip used to control movement.*  fastener  *Closes or secures something.*  design  *A plan of a product shown by drawing, computer modelling or writing.*  evaluate  *Looking at the positives and negatives of a product or design.*  purpose  *The reason a product is created. The thing it is designed to do.* |
| Year 3 | I know what a design brief is  I know where levers and linkages are used in commercial products or industry  I know why levers are used to lift loads | | | | I am learning the difference between a fixed and loose pivot  I am learning how to use lever and linkage mechanisms  I am learning the difference between inputs and outputs  I am learning how to increase accuracy when measuring, marking out and cutting (i.e. measure in mm rather than cm or inches) | | | |  | loose pivot  *A pivot which moves.*  fixed pivot  *A pivot which doesn’t move.*  system  *A set of things working together as part of a mechanism.*  input  *Information being given to a computer.*  process  *A series of actions or steps taken to achieve an outcome.* |
| Year 4 | I know how a lever and pivot can be positioned to lift a greater weight | | | | I am learning where loose and fixed pivots are used in products  I am learning how to use lever and linkage mechanisms  I am learning the difference between inputs and outputs  I am learning how to increase accuracy when measuring, marking out and cutting (i.e. measure in mm rather than cm or inches) | | | |  | output  *The information that leaves a system.*  linear  *Straight lines.*  rotary  *Turning around a circle.*  linkage  *Solid, usually metal links (bars) connected to two or more other links by pin joints.* |
| Year 5 | I know where pulleys and gears are used in commercial products and industry  I know what forces are acting on pulleys and gears (i.e. friction, gravity)  I know whether a gear will turn clockwise or anticlockwise | | | | I am learning that mechanical and electrical systems have an input, process and output  I am learning what a gear is  I am learning what a pulley is  I am learning that gears and pulleys can be used to speed up, slow down or change the direction of movement  I am learning how to accurately draw an exploded diagram | | | |  | pulley  *A series a wheels and axles that lets you lift heavy objects.*  gear  *A toothed cog that drives a belt or turns another gear.*  driver  *The gear through which the power is transferred.*  follower  *The gear which is driven by the driver gear.*  rotation  *spinning or turning around a central point.*  spindle  *The rotating shaft of a machine.*  Gear ratio  *The relationship between the size of the gears and the rotation they produce.*  annotated drawings  *Design drawings that have written thoughts surrounding them, or give specific details such as measurements.*  exploded diagrams  *A diagram which shows how parts fit together in a product.* |
| Year 6 | I know how ratio affects speed of rotation | | | | I am learning that mechanical and electrical systems have an input, process and output  I am learning what a gear is  I am learning what a pulley is  I am learning that gears and pulleys can be used to speed up, slow down or change the direction of movement  I am learning how to accurately draw an exploded diagram | | | |  | Transmit  *To send out or give off.*  Functionality  *The purpose that something is expect to fulfil. The function.*  oscillating  *To swing back and forth with a regular rhythm*  reciprocating  *moving backwards and forwards in a straight line.* |
| Structures | | | | | | | | | | |
| Nursery | | Reception | Year 1 | Year 2 | | Year 3 | Year 4 | Year 5 | | Year 6 |
|  | | Freestanding Structures | Freestanding Structures | Freestanding Structures | | Shell Structures | Shell Structures | Frame Structures | | Frame Structures |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception | I know one example of a strong structure  I know one example of a strong/weak material | | | | I am learning how to make a freestanding structure from simple blocks/boxes  I am learning how to make a structure taller  I am learning how to make a structure more stable | | | |  | cut  *Divide something into pieces or take away extra material.*  fold  *Bend over on itself.*  join  *Link, fasten or connect together.* |
| Year 1 | I know some strong/stiff structures (i.e. climbing frame, tower)  I know what materials are useful for strengthening or stiffening structures and why this is  I know some simple facts about an important structural engineer (i.e. Isambard Kingdom Brunel) | | | | I am learning how to make freestanding structures stronger, stiffer and more stable  I am learning how to join some simple materials  I am learning the simple order of making a structure  I am learning some simple finishing techniques to complete their structure  I am learning the name of simple 2D shapes | | | |  | fix/ed  *Fastened securely in place.*  weak  *Easily broken or damaged.*  strong  *Able to withstand force, pressure or wear.* |
| Year 2 | I know some strong/stiff structures (i.e. climbing frame, tower)  I know what materials are useful for strengthening or stiffening structures and why this is  I know some simple facts about more than one structural engineer (i.e Gustavo Eiffel, IKB) | | | | I am learning how to make freestanding structures stronger, stiffer and more stable  I am learning how to join some simple materials  I am learning a simple order of making a structure  I am learning some simple finishing techniques to complete their structure  I am learning the name of simple 3D shapes | | | |  | structure  *A building or object made from several parts.*  base  *The part on which a structure rests.*  thicker  *Opposite sides are further apart.*  thinner  *Opposite sides are closer together.*  cube  *A 3-D shape made from 6 equal squares*.  cuboid  *A 3-D shape made from 6 rectangular faces.* |
| Year 3 | I know why engineers use certain structures for certain purposes  I know how engineers solve design problems i.e. building Burji Khalifa in Dubai  I know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan) | | | | I am learning more sophisticated methods for stiffening/strengthening structures  I am learning what a net is  I am learning the names of more complex 3D shapes  I am learning which tools are appropriate for cutting and scoring materials  I am learning how to test a material’s strength  I am learning how to use CAD to develop a product | | | |  | shell  *A hard, protective outer case.*  net  *A pattern to cut out to make a model of a solid shape.*  marking out  *To show where a shape begins and ends before cutting out.*  material  *The substance from which something is made.*  joining  *Linking or connecting materials together.*  stiff  *Not easily bent.* |
| Year 4 | I know why engineers use certain structures for certain purposes  I know how engineers solve design problems i.e. building Burji Khalifa in Dubai  I know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan) | | | | I am learning more sophisticated methods for stiffening/strengthening structures  I am learning what a net is  I am learning which tools are appropriate for cutting and scoring materials  I am learning how to test a material’s strength  I am learning how to use CAD to develop a product | | | |  | **Shell Structures:**  assemble  *Fit together separate parts.*  triangular prism  *2 triangular bases and 3 rectangular sides.*  vertex  *The meeting point of 2 lines which form an angle.*  scoring  *Scratch or notch a line on a surface.*  adhesives  *Glues*.  corrugating  *Add strength or rigidity by using parallel ridges.*  ribbing  *Add supportive material to a surface to strengthen*.  laminating  *Overlay a surface with a protective and strengthening material.* |
| Year 5 | I know why engineers use complex structures for certain purposes  I know how engineers solve complex design problems i.e. building Burji Khalifa in Dubai  I know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan) | | | | I am learning how to stiffen, strengthen and reinforce a range of 3-D frameworks  I am learning which materials are best suited to stiffen and reinforce by selecting them due to their properties  I am learning which shapes are the strongest and will support the most weight in a structure  I am learning how to use a range of tools i.e. junior hacksaws, G-clamps, bench hooks, hand drills safely | | | |  | reinforce  *Strengthen or support, especially with added material.*  stability  *Does not move or fall over easily.*  temporary  *Lasting for a limited time. Can be taken apart.*  permanent  *Remains unchanged, will not come apart.*  prototype  *The first version of a product.*  design brief  *A document with the core details of a project.* |
| Year 6 | I know why engineers use complex structures for certain purposes  I know how engineers solve complex design problems i.e. building Burji Khalifa in Dubai  I know some simple facts about more than one structural engineer (i.e. IKB, Gustavo Eiffel, Peter Rice, Fazlur Khan) | | | | I am learning how to stiffen, strengthen and reinforce a range of 3-D frameworks  I am learning which materials are best suited to stiffen and reinforce by selecting them due to their properties  I am learning which shapes are the strongest and will support the most weight in a structure  I am learning how to use a range of tools i.e. junior hacksaws, G-clamps, bench hooks, hand drills safely | | | |  | triangulation  *using multiple sources of data to enhance the credibility of research.*  innovation  *A new method, idea or product.*  functionality  *The way something works or operates.* |
| Food | | | | | | | | | | |
| Nursery | | Reception | Year 1 | Year 2 | | Year 3 | Year 4 | Year 5 | | Year 6 |
|  | | Preparing Fruit and Vegetables | Preparing Fruit and Vegetables | Preparing Fruit and Vegetables | | Healthy and Varied Diet | Healthy and Varied Diet | Celebrating Culture and Seasonality | | Celebrating Culture and Seasonality |
|  | Disciplinary Knowledge    *The tools/methods that we use in order to study the subject and gain the necessary knowledge.* | | | | Substantive Knowledge  *The knowledge children need to be able to know as part of the programme of study in the subject.* | | | | Oracy  *The physical, linguistic, cognitive and emotional skills to enable successful discussion and rich talk.* | Vocabulary  *The new vocabulary children need to be taught in order to access and understand the curriculum. (tier 2 and tier 3)* |
| Reception | I can identify familiar fruits and vegetables | | | | I am learning how to mix ingredients  I am learning how to follow simple health and safety procedures | | | |  | cut  *Divide something into pieces or take away extra material.*  taste  *The flavour of food or drink in your mouth.*  fruit  *A food that comes from a tree or plant and has seeds.*  vegetable  *The part of a plant you can eat. Does not have seeds.* |
| Year 1 | I know where a range of fruit and vegetables come from.  I know the principles of a varied diet | | | | I am learning how to use simple cutting tools to prepare soft fruit and vegetables  I am learning how to follow simple health and safety procedures  I am learning how to peel, chop, slice and grate foods. | | | |  | juicy  *Full of liquid.*  crunchy  *Firm food which make a loud noise when you chew them.*  sharp  *Having an edge that can cut something easily.*  crisp  *Cool or fresh in the mouth.*  sour  *Having an acidic taste.*  flesh  *The part of a fruit or vegetable you can eat.*  skin  *The thin outer covering of a fruit or vegetable.*  seed  *The part of a plant which grows a new plant.*  pip  *A small hard seed in a fruit.*  core  *The tough central part of a fruit.* |
| Year 2 | I know how to name and sort foods into the five groups in The Eatwell Plate  I know that everyone should eat at least five portions of fruit and vegetables every day | | | | I am learning how to prepare simple dishes safely and hygienically, without using a heat source  I am learning how to use techniques such as cutting, peeling and grating with greater confidence and independency | | | |  | slicing  *To cut something into thin sections.*  peeling  *To remove the outer skin of a fruit or vegetable*.  squeezing  *Pressing firmly to remove juice.*  healthy diet  *Balancing food groups to avoid weight gain.*  ingredients  *The items used to make a particular food.*  planning  *Deciding on what to do and when*.  arranging  *Sorting food items on a plate to look nice*. |
| Year 3 | I know about a range of fresh and processed foods for their product  I know whether foods are grown, reared or caught | | | | I am learning how to chop a wider range of foods using different techniques i.e. claw grip, bridge grip.  I am learning how to use sensory information to evaluate a variety of ingredients  I am learning how to combine foods using different utensils i.e. whisk, spatula  I am learning relevant health and safety procedures when handling and preparing foods | | | |  | texture  *The feel of something in tour mouth.*  preference  *A greater liking for something over something else.*  greasy  *Covered in oil.*  moist  *Slightly wet. Damp.*  fresh  *Made recently.*  grown  *From a plant grown from the ground or soil.*  reared  *Animals bred for food.*  caught  *Food captured from the wild to eat.*  frozen  *Food that has been in a freezer.*  tinned  *Food which comes in tins to help make it last longer*. |
| Year 4 | I know about a range of fresh and processed foods for their product  I know whether foods are grown, reared or caught  I know about fair trade foods  I know about one key chef and their contribution to healthy eating i.e. Jamie Oliver – healthy schools | | | | I am learning how to chop a wider range of foods using different techniques i.e. claw grip, bridge grip.  I am learning how to measure ingredients using simple measures i.e. cup, tbsp  I am learning how to use sensory information to evaluate a variety of ingredients  I am learning how to combine foods using different utensils i.e. whisk, spatula  I am learning relevant health and safety procedures when handling and preparing foods | | | |  | appearance  *The way that something looks.*  savoury  *Salty or spicy rather than sweet.*  hygienic  *Prevent contamination by being clean.*  edible  *Able to eat. Not poisonous.*  processed  *Food made in a factory. Not natural.*  seasonal  *Food which is ready to eat at different times of the year.*  harvested  *Crops gathered from a field to eat.* |
| Year 5 | I know about a range of chefs and their individual styles of cooking  I know about organic foods and the impact of these  I know about food allergens | | | | I am learning some more advance methods for mixing ingredients i.e. rubbing in  I am learning how to measure ingredients accurately using different units  I am learning how to follow a recipe  I am learning how to select appropriate utensils for specific jobs.  I am learning how to cut, shape and knead dough | | | |  | yeast  *A microscopic fungus that converts sugar to alcohol and carbon dioxide.*  dough  *A thick, malleable mixture of flour and liquid.*  carbohydrate  *A large group of organic compounds including sugars. Provide energy for animals.*  allergy  *A reaction to particular food groups. Can be damaging to the body.* |
| Year 6 | I know about a range of chefs and their individual styles of cooking  I know about organic foods and the impact of these  I know about food allergens and how to keep these out of foods | | | | I am learning some more advance methods for mixing ingredients i.e. rubbing in  I am learning how to measure ingredients accurately using different units  I am learning how to follow a recipe  I am learning how to select appropriate utensils for specific jobs.  I am learning how to cut, shape and knead dough | | | |  | wholemeal  *flour made using all of the wheat kernel.*  unleavened  *breads made not using rising agents such as yeast.*  baking soda  *bicarbonate of soda. Makes breads, cakes or muffins light and fluffy.*  vitamins  *Nutrients your body needs in small amounts to work well.*  gluten  *general name for the proteins found in wheat, rye and triticale.*  intolerance  *an in ability to eat certain foods due to an adverse reaction.* |