Over St. John's CE Primary School

'Let your light shine before others.' Matthew 5:16

DT Progression of Knowledge and Skills

Focus	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	**Skills** I can select appropriate resources. I can use gestures, talking and arrangements of materials and components to show design. I can use language of designing and making (join, build, shape, longer, shorter, heavier etc.) **Knowledge** I know you design by making. I know what resources to select that are appropriate resources for my task.	**Skills** I can have my own ideas. I can explain what I want to do. I can explain what my product is for, and how it will work. I can use pictures and words to plan, begin to use models. I can design a product for myself following design criteria. I can research similar existing products. **Knowledge** I know I need to draw and label my design. I know what the purpose of my design is. I know why I need to research similar designs.	**Skills** I can have my own ideas and plan what to do next. I can explain the purpose of a product, how it will work and how it will be suitable for the user. I can describe design using pictures, words, models, diagrams and begin to use ICT. I can design products for myself and others following the design criteria. I can choose best tools and materials and explain choices. I can use knowledge of existing products to produce ideas. **Knowledge** I know I need to draw, label, and annotate my design. I know I need to follow a design criterion. I know why I chose the tools and material used.	**Skills** I can begin to research others' needs. I can show design meets a range of requirements. I can describe the purpose of product. I can follow a given design criteria. I can have at least one idea about how to create product. I can create a production plan which shows the order of making, equipment and tools needed. I can describe design using an accurately labelled sketch and words. I can make design decisions. I can explain how my product will work. I can make a prototype. **Knowledge** I know why I need to conduct research into a design brief. I know what a production plan is. I know why we need an accurately labelled sketch with some measurements. I know what a prototype is.	**Skills** I can research for design ideas using the computer. I can show design meets a range of requirements and is fit for purpose. I can begin to create own design criteria. I have at least one idea about how to create product and suggest improvements for design. I can produce a plan and explain it to others. I can say how realistic a plan is. I can include an annotated sketch with measurements. I can make and explain design decisions considering availability of resources. I can make a prototype that explores a design refinement. I can begin to use computers to help with my design. **Knowledge** I know I can use the computer to research design ideas. I know whether the design and finished piece is fit for purpose and ~~can~~ why we might suggest refinements. I know the computer can help to create my design.	**Skills** I can use the internet and questionnaires for research and design ideas. I can take a user's view into account when designing. I can begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose. I can create own design criteria. I can produce a logical, realistic plan and explain it to others. I can use cross-sectional planning and annotated sketches. I can make design decisions considering time and resources. I can clearly explain how parts of product will work. I can model and refine design ideas by making prototypes and using pattern pieces. I can use computers to draw/show design. **Knowledge** I know that research can improve my design and improve the viability of the product. I know what a cross sectional drawing is and why I might annotate it. I know what a pattern piece is and that it is used to refine and test out products.	**Skills** I can draw on market research to inform design. I can use research of user's individual needs, wants, and requirements for design. I can identify features of design that will appeal to the intended user. I can create own design criteria and specification. I can follow and refine a logical plan. I can use annotated sketches, cross sectional planning and exploded diagrams. I can make design decisions, considering, resources and cost. I can clearly explain how parts of design will work, and how they are fit for purpose. I can independently model and refine design ideas by making prototypes, improving pattern pieces and testing materials for purpose. I can use a computer-based drawing package to aid the designs process. **Knowledge** I know why we gather appropriate market research. I know the importance of a detailed design plan. I know that I need to work out the cost and time implication of my design. I know why we test a design to ensure it is fit for purpose. I know we can use a drawing package to draw some of my design.
	Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Make	**Skills** I can construct with a purpose, using a variety of resources. I can use simple tools and techniques. I can build / construct with a wide range of objects. I can select tools & techniques to shape, assemble and join. I can discuss how to make an activity safe and hygienic. I can record experiences by drawing, writing and photographs. I can understand different media can be combined for a purpose. **Knowledge** I know that that you can make models with a variety of material including construction kits and found material. I know that tools can be used to shape material. I know that material can be joined together using glue or Sellotape. I know we need to draw a design.	**Skills** I can explain what I am making and why. I can consider what I need to do next. I can select tools/equipment to cut, shape, join, finish, and explain my choices. I can mark out, cut, and shape, with support. I can choose suitable materials and explain choices. I can try to use finishing techniques to make product look good. I can work in a safe and hygienic manner with support. **Knowledge** I know why we need to mark, and shape material to suit my needs. I know why I have selected my resources and tools. I know to use the equipment safely. I know two ways to finish my product to make it look good. .	**Skills** I can explain what I am making and why it fits the purpose. I can make suggestions as to what I need to do next. I can join materials/components together in different ways. I can measure, mark out, cut and shape materials and components, with support. I can describe which tools I am using and why. I can choose suitable materials and explain choices depending on characteristics. I can select the finishing techniques to make product look good. I can work safely and hygienically. **Knowledge** I know several ways to join materials/components together. I know that to shape material I need to measure, mark out and cut. I know the tool which is best suited to my purpose. I know I need to work in a safe and hygienic manner. I know the finishing technique that will best suit my product.	**Skills** I can select suitable tools/equipment, explain choices; begin to use them competently. I can select appropriate materials which are fit for purpose. I can work through a plan in order. I can consider how good product will be and think of ways to improve it. I can begin to measure, mark out, cut and shape materials/components with some accuracy. I can begin to assemble, join, and combine materials and components with some support. I can apply a range of finishing techniques to improve the presentation of the product. **Knowledge** I know the reason why I have selected different tools and can explain how to use them. I know why I have used the material/components parts of my design. I know to follow the design plan. I know we need to measure, mark out cut and shapes material with some accuracy. I know it is important to finish my product to a high standard.	**Skills** I can select suitable tools and equipment, explain my choices in relation to required techniques and use accurately. I can select appropriate materials and explain why they are fit for purpose. I can organise and work through a plan in order ensuring I have all the resources needed. I can realise if product is going to be good quality. I can measure, mark out, cut and shape materials/components with accuracy. I can assemble, join, and combine materials and components with some accuracy. I can apply a range of finishing techniques with some accuracy. **Knowledge** I know the reason to use the tools I have selected and can explain how to use them safely. I know the importance of a detailed plan and resource list. I know to accurately assemble my product. I know we need to measure accurately. I know the finish techniques that are appropriate to my design brief.	**Skills** I can select tools/equipment with the design brief in mind and use them with a good level of precision. I can produce suitable lists of tools, equipment/materials needed. I can select appropriate materials, fit for purpose; explain choices, considering functionality. I can create and follow detailed step-by-step plan. I can explain how product will appeal to an audience. I can accurately measure, mark out, cut, shape and if necessary, adapt materials/components during the making process. I can accurately apply a range of finishing techniques and explain my choices. I can use techniques that involve a small number of steps. I can begin to be resourceful with practical problems. **Knowledge** I know the tools /equipment that are best suited to my product and can explain my choice. I know what to compile in a resources list considering my design brief. I know why a detailed plan improves the likelihood of design success. I know the finishing techniques best suited to my product and can explain why.	**Skills** I can use select tools and equipment considering the design brief and personal preference. I can produce suitable lists of tools, equipment, materials needed considering constraints, such as availability, time, and cost. I can select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics. I can create, follow, and adapt detailed step-by-step plans. I can explain how product will appeal to audience; make changes to improve quality. I can accurately measure, mark out, cut, shape, and adapt materials/components to improve the design. I can make reasonable adaptations to making process whilst still ensuring the accuracy of the process. I can combine finishing techniques that will appeal to the target audience and explain my choices. I can use techniques that involve an ordered sequence of steps to ensure they work. I can be resourceful with practical problems and seek to solve them independently. **Knowledge** I know the tools and equipment that are best suited for the task and can explain why taking into account personal competency and preference. I know a detailed plan should consider and take into account real world constraints. I know the material I have used is fit for purpose and I can explain my choices. I know to adapt my making process to ensure success. I know to follow a detailed plan and to retrace my steps to pinpoint any issue.

							I know the making process can include adaptations to solve problems.
	Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Evaluate	**Skills** I can adapt work if necessary. I can practise some appropriate safety measures independently. I can talk about how things work. I can look at similarities and differences between existing objects / materials / tools. **Knowledge** I know I need to work safely. I know why my 'make' works and can talk about it.	**Skills** I can talk about my work, linking it to what I was asked to do. I can talk about an existing product considering use, materials, how they work, audience, where they might be used and what is good/not good about them. I can talk about things that other people have made. I can begin to talk about what could make my/the product better. **Knowledge** I know I need to follow the design. I know I need to incorporate good ideas into my model. I know I need to adapt and improve my product.	**Skills** I can describe what went well, thinking about design criteria. I can talk about existing products considering use, materials, how they work, audience, where they might be used, and express personal opinion. I can evaluate how good existing products are. I can talk about what I would do differently if I were to do it again and why. **Knowledge** I know I need to evaluate my work against the design criteria. I know I can magpie good ideas and build them into my product. I know what I would do to improve my product.	**Skills** I can look at design criteria while designing and making. I can use the design criteria to evaluate the finished product. I can say what I would change to make design better. I can begin to evaluate existing products, considering how well they have been made, materials, whether they work, how they have been made, fit for purpose. I can begin to understand by whom, when and where products were designed. I can learn about some inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products. **Knowledge** I know I need to follow a design criteria. I know I need to evaluate my product and suggest improvements. I know about a designer who has influenced the design/creation of similar product.	**Skills** I can refer to design criteria while designing and making. I can use criteria to evaluate product. I can begin to explain how I could improve original design. I can evaluate existing products, considering how well they have been made, materials, whether they work, how they have been made, fit for purpose. I can discuss by whom, when and where the products were designed. I can research whether products can be recycled or reused. I can learn about innovators and designers who worked within this area. **Knowledge** I know why it is importance that each element of the production is being led by the design criteria. I know I need to evaluate my product against the design criteria. I know whether my product is recyclable or reusable. I know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products.	**Skills** I can evaluate quality of design whilst designing and making. I can evaluate ideas and finished product against specification, considering purpose and appearance. I can test and evaluate final product. I can evaluate and discuss existing products, considering how well they have been made, materials, whether they work, how they have been made, fit for purpose. I can begin to evaluate how much products cost to make and how innovative they are. I can research how sustainable materials are. I can talk about some key inventors/designers/ engineers/ chefs/manufacturers. **Knowledge** I know I need to evaluate and test the quality of the product against the design criteria. I know what a cost and time analysis is. I know what works of innovators and creators have impacted on the development of this product. I know what the sustainability of the materials used is.	**Skills** I can evaluate quality of design while designing and making; is it fit for purpose? I can check the design and improve it throughout the entire process. I can evaluate ideas and finished product against specification, stating if it is fit for purpose. I can test and review final product; explain what would improve it and the effect different resources may have had. I can evaluate how much products cost to make and how innovative they are. I can research and discuss how sustainable materials are. I can consider the impact of products beyond their intended purpose. I can discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground-breaking products. **Knowledge** I know why my product is fit for purpose. I know what the sustainable material I used is and can talk about alternatives. I know the work of innovators and creators has impacted not only on their designs but the work of others. I know what the impact my produce has on the world around us, and I can discuss ways to negate it.
Vocabulary for Design, Make and Evaluate	**Vocabulary** Plan and draw.	**Vocabulary** Investigating, design, evaluate.	**Vocabulary** Design criteria and function,	**Vocabulary** Prototype, annotated sketch, functional and innovative.	**Vocabulary** Evaluating and refinements	**Vocabulary** Functionality and authentic.	**Vocabulary** Efficacy and cross sectional drawings.
	Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical knowledge Material/Structure	**Skills** I can begin to join material with help. I can choose the material/resources needed. I can describe differences in materials. **Knowledge** I know two ways to join material. I know what material I want to use and can explain my choice. **Vocabulary** Strong and weak point,	**Skills** I can begin to measure and join materials, with some support. I can describe some different characteristics of materials. I can make a free-standing structure stronger, stiffer and more stable. I can use joining, rolling, or folding to make it stronger. **Knowledge** I know the best way to join the material I have chosen. I know why some material is better than others for the product I am making. I know why you need to stiffen a standing structure. **Vocabulary** Structure and framework.		**Skills** I can measure materials using standard units of measure. I can use appropriate materials. I can join materials in different ways. I can work accurately to make cuts and holes. I can use own ideas to try to make product stronger. **Knowledge** I know why we use standard units of measure to aid the design. I know which material best suits my product and discuss why. I know different ways to join material and justify the choice I made. I know I need to ensure my product has integral strength. **Vocabulary** Shell structure, three-dimensional (3-D) and frame	**Skills** I can measure carefully to avoid mistakes. I can use appropriate material and explain why. I can continue working on product even if prototype did not work. I can make a strong, stiff structure suitable to the product. I can identify the points of structural weakness. **Knowledge** I know to check my measurements for accuracy. I know which material would best suit my product. I know I need to make my product strong enough for its purpose. I know what will improve my prototype. **Vocabulary** Corrugating, ribbing, laminating, graphics and reinforce.	**Skills** I can select materials carefully, considering intended use of the product, the aesthetics and functionality. I can reinforce and strengthen a 3D frame. I can continue working on product even if original did not work. I can explain how product meets design criteria. I can identify the possible weak spots in my design and incorporate ways to strengthen these. **Knowledge** I know what material is best for my product and I can explain why. I know I need to strengthen a 3D frame and can discuss the best option. I know I need to fix a failing design and can discuss design amendments in retrospect. **Vocabulary** Triangulation and annotated sketch.	
Technical knowledge for Mechanisms		**Skills** I can use levers or slides. I can incorporate a pivot point. **Knowledge** I know what the difference is between a slide and a lever. I know where to put my pivot point with support.	**Skills** I can begin to understand how to build wheels and axles. I can build a bracket/hold for a moving axle. **Knowledge** I know I need to fix wheels onto an axle. I know the difference between a fixed and freely moving axle.	**Skills** I can make a lever and linkage mechanism. I can use a fixed pivot and a loose pivot in my system. I can alter product after testing to improve how it works. I can share good working practice and ideas with my peers. **Knowledge** I know what a lever and linkage mechanisms is and how it creates movement. I know what a fixed and loose pivot point is.	**Skills** I can create a pneumatic system that creates movement. I can select most appropriate tools / techniques to control the flow of air. I can explain alterations to the product after checking/testing the pneumatics. I can alter the pressurisation of air to create varied movements. **Knowledge** I know what I need to create a sealed pneumatic system. I know I control movement through altering the pressure of the air within the system.	**Skills** I can build a pulley and talk about the different types of rotation. I can build a pulley system that creates movement. I can control the movement of the pulley system. **or** I can build a gear system to create movement. I can explore gear ratio and decide which one is best for the product. I can control the movement of the gear system. **Knowledge** I know why a pulley system works. I know what a driver and follower is. I know why the tension in the belt is important. **or**	**Skills** I can use a Cam to create movement and change the direction of the movement. I can name the different types of movement created by a Cam. (Oscillating, reciprocating, and rotating) I can choose a Cam to create the movement required for my design. **Knowledge** I know that a cam is a rotating piece that transforms rotary motion into linear motion. I know the different types of movement created by Cams.

		Vocabulary Slider, lever, pivot and bridge/guide.	**Vocabulary** Wheel, fixed/free axle, axle holder, chassis and cab.	I know the difference between fixed and loose pivot points. **Vocabulary** linkage, output, linear, rotary, oscillating and reciprocating.	**Vocabulary** tubing, syringe, plunger, pneumatic system, compression, pressure, inflate, deflate, pump, seal, and air-tight.	I know why the gear ratio is important. I know what a driver and a follower is. I know why the tension in the belt is important. **Vocabulary** pulley, drive belt, gear, driver, follower, circuit diagram, annotated drawings, exploded diagrams, mechanical system and electrical system,	I know that there are different types of Cams for different movements. **Vocabulary** cam, snail cam, off-centre cam, peg cam, pear shaped cam follower, axle, shaft, crank, framework rotation, rotary motion and reciprocating motion.
	Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Technical knowledge Textiles	**Skills** I can choose textiles for a specific purpose. I can cut, with support, and manipulated the textile to suit my design. **Knowledge** I know which fabric suits my project. **Vocabulary** Fabric, decorate, make and finish.		**Skills** I can carefully measure and cut textiles to produce accurate pieces. I can join textiles together to make a product and explain how I did it. I can understand that a 3D textile structure can be made from two identical fabric shapes. I can use a simple running stich on my product. **Knowledge** I know I need to use a pattern to produce accurate measurements. I know different ways to join the fabric. I know what a running stich is. **Vocabulary** Template, pattern pieces,mock-up, and evaluate.	**Skills** I can use a pattern correctly. I can cut out a pattern correctly and understand the need for a seam allowance. I can join using either, backwards running stitch, over sew stitch or blanket stitch. I can strengthen, stiffen, and reinforce existing fabrics. I can begin to understand that a simple fabric shape can be used to make a 3D textiles project. **Knowledge** I know I need to pin and cut out a pattern correctly including a seam allowance and the pattern orientation. I know what stitch to use to join two pieces of fabric. I know why to reinforce my product to make it fit for purpose. **Vocabulary** stiffening, templates, seam, seam allowance, aesthetics and pattern.		**Skills** I can think about the product when choosing textiles. I can think about how to make product strong and light. I can begin to devise a template. I can make a 3d product can be made from a combination of accurately made pattern pieces and fabric shapes. I can use a backstitch or whip stitch to strengthen the seam. **Knowledge** I know I need to choose a fabric fit for purpose. I know I need to make a template/pattern and use it to cut out my fabric accurately. I know you can join two pieces of fabric using a back or whip stitch. **Vocabulary** Wadding and reinforce.	
	Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Technical knowledge Food & Nutrition	**Skills** I can discuss how to make an activity safe and hygienic. I can begin to understand some food preparation tools, techniques, and processes. I can practise stirring, mixing, pouring, blending. I can understand need for variety in food. I can begin to understand that eating well contributes to good health. **Knowledge** I know I need to use a vegetable peeler and knife with adult support. I know some foods that are good for me to eat. I know need to prepare food hygienically. **Vocabulary** fruit and vegetable names and names of equipment/utensils	**Skills** I can wash hands, clean surfaces and be hygienic during the food preparation with adult support. I can say where some foods come from, (i.e., plant or animal) I can describe differences between some food groups (i.e., sweet, vegetable etc.) I can discuss how fruit and vegetables are healthy. I can cut, peel, grate, and squeeze safely, with support. **Knowledge** I know to use a vegetable peeler, knife, grater, and juice, safely, with adult support. I know which food group some of the food I am using comes from. I know what is healthy for me and why. **Vocabulary** sensory vocabulary e.g., soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, core etc	**Skills** I can explain hygiene and keep a hygienic kitchen. I can describe properties of ingredients and importance of varied diet. I can say where food comes from (animal, underground etc.) I can describe how food is farmed, home-grown, caught. I can describe “five a day.” I can cut, peel and grate with increasing confidence. **Knowledge** I know I need to prepare food safely. I know what a healthy and varied diet should look like. I know where my food comes from. I know what ‘five-a-day’ means and why it is important. **Vocabulary** Healthy diet and dietary requirements.	.	**Skills** I can explain how to be safe/hygienic during the food production and storage. I can carefully select ingredients. I can understand ingredients can be fresh, pre-cooked, or processed. I can begin to understand about food being grown, reared, or caught in the UK or wider world. I can describe eat well plate and how a healthy diet=variety / balance of food and drinks. I can explain importance of food and drink for active, healthy bodies. I can use some of the following techniques independently: peeling, chopping, slicing, grating, mixing, spreading, kneading, or baking. **Knowledge** I know why hygienic food preparation and storage is important. I know I need to follow a recipe. I know where my food comes from. I know what the importance of eating a healthy balanced diet is. **Vocabulary** Savoury, hygienic, edible, reared, caught seasonal, harvested., fresh and processed,	**Skills** I can begin to understand seasonality of foods. I can understand food can be grown, reared, or caught in the UK and the wider world. I can explain how there are different substances in food / drink needed for health. *I can chop food safely and independently using either the bridge or claw technique **Knowledge** I know that food production is linked closely to the seasons. I know about different food production and processes. I know that food contains vitamins, minerals and trace elements that are vital to a healthy diet. I know I need to use a sharp knife safely. **Vocabulary** Preference, protein, vitamins, nutrients and nutrition.	**Skills** I can understand a recipe can be adapted by adding / substituting ingredients. I can explain seasonality of foods. I can learn about some food processing method and how it impacts on the food. I can adapt recipes to change appearance, taste, texture, or aroma. I can describe some of the different substances in food and drink, and how they can affect health. I can prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source. **Knowledge** I know I need to adapt a recipe to suit dietary requirements. I know what the different processes food can go through and what impact it has on nutrition. I understand that some food has greater health benefits than others. I know I need to use a cooker safely. **Vocabulary** Wholemeal, unleavened, carbohydrate, gluten, dairy, allergy, intolerance and savoury.
	Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Technical knowledge Electrical System				**Skills** I can use simple circuit in product. I can incorporate a switch into the product. I can use number of components in circuit. **Knowledge** I know that switches can be used in a circuit. I know why a circuit work.		**Skills** I can incorporate switch/lights/timers into product. I can program a computer to control product. I can think of ways in which adding a circuit would improve product. **Knowledge** I know you can incorporate switches, lights, and timers into my circuit for a purpose. I know I need to programme the computer to control the product.	

				Vocabulary Series circuit, fault, connection and toggle		I know I need to build circuits safely. **Vocabulary** reed switch, light dependent resistor (LDR), tilt switch light emitting diode (LED),	