Tipton St John C of E Primary School
Progression in Design and Technology

	FSU	KS1	LKS2	UKS2
Breadth of Study & Enquiry Questions		**Year A:** **Food:** Investigate, design and create food for a celebration. **Structures:** Can you make houses safe from floods? Kampong Ayer **Structures/Mechanisms:** Fire Engines – link with History **Year B:** **Textiles:** Joining materials to make an attractive Christmas decoration **Structures and Mechanisms:** A vehicle to transport a dragon (Japan) **Forces, structures, mechanisms:** Wind power – kites (Japan) -	**Year A:** **Textiles:** Seasonal Stockings **Mechanisms:** A roman trebuchet **Structures:** Make a mini greenhouse (science link) **Year B:** **Food:** Making a healthy picnic **Structures and systems:** Use circuits to build an alarm system. **Structures:** Which birds like which bird feeder? -	**Year A** **Structures:** research, design and build an Anglo-Saxon house. **Textiles:** Design and make your own flag (heraldry, history) **Budgeting and Planning:** Summer Fair mini-project – design and make items to sell at the Summer Fair. **Year B:** **Food:** How does our food change with our location? **Structures and mechanisms:** Design and make a 'Mighty Machine' using Espresso 'Toy Design' as a starting point. **Textiles:** Design and make a hat to protect you from the sun.
Developing, Planning and Communicating Ideas	Begin to draw on their own experience to help generate ideas. Begin to understand the development of existing products: What they are for, how they work, materials used. Start to suggest ideas and explain what they are going to do. Begin to identify who the product for. Begin to develop their ideas through talk and drawings.	Start to draw on their own experience to help generate ideas and research conducted on criteria. Understand the development of existing products: What they are for, how they work, materials used. Begin to develop their design ideas through discussion, observation, drawing and modelling. Start to suggest ideas and explain what they are going to do. Understand how to identify a target group for what they intend to design and make based on a design criteria. Start to understand whether products can be recycled or reused. Identify a purpose for what they intend to design and make. Begin to develop their ideas through talk and drawings and label parts. Make templates and mock ups of their ideas; possibly using: card, paper or using ICT.	Start to generate ideas, considering the purposes for which they are designing- begin to make links with Mathematics and Science. Use results of investigations, information sources, including ICT when developing design ideas. Confidently make labelled drawings from different views showing specific features. Start to order the main stages of making a product. Identify a purpose and establish criteria for a successful product. 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. Identify the strengths and areas for development in their ideas and products. When planning, consider the views of others, including intended users, to improve their work. Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. When planning, explain their choice of materials and components according to function and aesthetic.	Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces. Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. Accurately apply a range of finishing techniques, including those from art and design. Draw up a specification for their design- link with Mathematics and Science. Plan the order of their work, choosing appropriate materials, tools and techniques. Suggest alternative methods of making if the first attempts fail. Identify the strengths and areas for development in their ideas and products. Know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose.

MAKING **Working with tools, equipment, materials and components to make quality products** **Including:** **Textiles** **Structures** **Mechanisms**		Begin to make their design using appropriate techniques. Begin to select tools and materials; use correct vocabulary to name and describe them. Build structures, exploring how they can be made stronger, stiffer and more stable. With help measure, cut and score with some accuracy. Learn to use hand tools safely and appropriately. Start to assemble, join and combine materials in order to make a product. Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. Begin to assemble, join and combine materials and Components together using a variety of temporary methods e.g. glues or masking tape. Demonstrate how to cut, shape and join fabric to make a simple product. Use basic sewing techniques. Start to choose and use appropriate finishing techniques to improve the appearance of product based on their own ideas.	Select a wider range of tools and techniques for making their product safely. i.e. construction materials and kits, textiles, food ingredients, mechanical components and electrical components. Know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. Start to join and combine materials and components accurately in temporary and permanent ways. Start to understand that mechanical and electrical systems have an input, process and output. To understand that mechanical systems such as levers and linkages or pneumatic systems create movement. Start to understand how mechanical systems such as cams or pulleys or gears create movement. Understand how more complex electrical circuits and components can be used to create functional products. Continue to learn how to program a computer to monitor changes in the environment and control their products. Understand how to reinforce and strengthen a 3D framework. Now sew using a range of different stitches, to weave and knit. Demonstrate how to measure, tape or pin, cut and join fabric with some accuracy. Begin to use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.	Confidently select appropriate tools, materials, components and techniques and use them. Use tools safely and accurately. Assemble components to make working models. Aim to make and to achieve a quality product. With confidence pin, sew and stitch materials together to create a product. Weigh and measure accurately (time, dry ingredients, liquids). Demonstrate when make modifications as they go along. Construct products using permanent joining techniques. Understand how mechanical systems such as cams or pulleys or gears create movement. Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. Know how to reinforce and strengthen a 3D framework. Understand that mechanical and electrical systems have an input, process and output. Use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.
Food	Begin to recognise that food comes from plants or animals. Begin to understand that food needs to be fresh and cooked properly.	Recognise that food is farmed, grown or caught and that all food comes from plants or animals Know that everyone should eat 5 portions of fruit or vegetables each day. Know how to name and sort foods into the five groups in The Eatwell plate	Understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.	Understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.

	Start to prepare simple foods using techniques: • Cutting • Peeling • Kneading • Rolling • spreading	Know how to prepare simple dishes safely and hygienically without using a heat source. Prepare a range of foods developing further techniques: • Cutting • Peeling • Grating	Understand how to prepare and cook a variety of dishes safely and hygienically**, including the use of a heat source.** Know how to use a range of techniques such as: • Peeling • Slicing • Chopping • Grating • Mixing • Spreading • Kneading • Baking Know that a healthy diet is made up from a variety and balance of different food and drink (the Eatwell Guide). Know that to be active and healthy, food and drink are needed to provide energy for the body.	Understand that food which is grown, reared or caught in the UK and across the world can be exported to meet consumer demand. Know that seasons may affect the availability and cost of food. Know how food is processed into ingredients that can be eaten or used in cooking. Understand how to prepare and cook a variety of dishes safely and hygienically, including the use of a heat source. Demonstrate a range of techniques such as; • Peeling • Slicing • Chopping • Mixing • Baking • Spreading Know that different food and drink contain different substances (nutrients, water, vitamins, carbohydrates, fibre) that are needed for a healthy lifestyle. Know that recipes can be adapted to change the appearance, taste, texture and aroma.
EVALUATING **Evaluating processes and products** **Key events and individuals**		Evaluate their work against their design criteria. Look at a range of existing products explain what they like and dislike about products and why. Start to evaluate their products as they are developed, identifying strengths and possible changes they might make. With confidence talk about their ideas, saying what they like and dislike about them.	Evaluate their products carrying out appropriate tests. Start to evaluate their work both during and at the end of the assignment. Be able to disassemble and evaluate familiar products and consider the views of others to improve them. Evaluate the key designs of individuals in design and technology has helped shape the world.	Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests. Evaluate their work both during and at the end of the assignment. Record their evaluations using drawings with labels. Evaluate against their original criteria and suggest ways that their product could be improved. Evaluate the key designs of individuals in design and technology has helped shape the world.
TECHNICAL KNOWLEDGE		Know about the simple working characteristics of materials and components.	Know how mechanical systems such as levers and linkages or pneumatic systems create movement.	Know how mechanical systems such as cams or pulleys or gears create movement.

Making products work		Know about the movement of simple mechanisms such as levers, sliders, wheels and axle. Know how freestanding structures can be made stronger, stiffer and more stable. Know that a 3-D textiles product can be assembled from two identical fabric shapes. Know that food ingredients should be combined according to their sensory characteristics. Know the correct technical vocabulary for the projects they are undertaking.	Know how simple electrical circuits and components can be used to create functional products Know how to program a computer to control their products. Know how to make strong, stiff shell structures. Know that a single fabric shape can be used to make a 3D textiles product. Know that food ingredients can be fresh, pre-cooked and processed.	Know how more complex electrical circuits and components can be used to create functional products. Know how to program a computer to monitor changes in the environment and control their products. Know how to reinforce and strengthen a 3D framework. Know that a 3D textiles product can be made from a combination of fabric shapes Know that a recipe can be adapted by adding or substituting one or more ingredients.