DT Curriculum St Erth

6 Key areas of Study in Design Technology					
Cooking and Nutrition Where food comes from, balanced diet, preparation and cooking skills. Kitchen hygiene and safety. Following recipes.	**Mechanisms and Mechanical systems** Mimic natural movements using mechanisms such as cams, followers, levers and sliders.	**Structures** Material functional and aesthetic properties, strength and stability, stiffen and reinforce structures.	**Textiles** Fastening, sewing, decorative and functional fabric techniques including cross stitch, blanket stitch and appliqué.	**Electrical Systems** Operational series circuits, circuit components, circuit diagrams and symbols, combined to create various electrical products.	**Digital World (KS2 only)** Program products to monitor and control, develop designs and virtual models using 2D and 3D CAD software.

Early years' framework expectations - Within understanding the world.

Framework	How the framework will be delivered
In working to achieve their Early Learning goals pupils develop skills and knowledge which will prepare them for the DT curriculum in KS1. Below are the objectives from the EYFS framework which St Erth has identified as important to develop readiness for KS1 DT. **ELG: Managing Self** • Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. **ELG: Fine Motor Skills** Children at the expected level of development will: • Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases. • Use a range of small tools, including scissors, paint brushes and cutlery. • Begin to show accuracy and care when drawing. **ELG: Creating with Materials** 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.	Design and Technology is taught through continuous provision and daily topic-based activities. Early skills of holding pencils, using scissors, junk modelling and healthy eating is a natural part of our day. Through outdoor learning, children explore using natural materials to create with. **Continuous provision:** -junk modelling -using scissors -construction area: make baby bear's chair, make a bridge for the gingerbread man, make a bed for your bear, make a house for the three pigs etc… -threading and sewing with laces -art and craft tools and equipment out for free choice (directed session throughout the term too) **Provision may include:** -Healthy breakfast – design and make porridge for baby bear -Gingerbread man – make playdough (playdough station under development) -Christmas: sew buttons to felt for a Christmas decoration. -Healthy eating: fruit, vegetable making snacks etc… -Make soup from vegetables grown. -Phonics: float the boat (oa sound) make boats to float. -Explore fabrics for textures of different animals etc -Natural materials: exploring natural materials – making insects with clay and natural items, make natural sculptures, plant bulbs in autumn to grow in spring. -Under the Sea: make boats and rockpools and explore materials that are water resistant, buoyant.

Year	Autumn	Spring	Summer
Year 1&2 Cycle A	**Mechanisms: Wheels and Axis- fire engines** Intent: The children will expolore modern fire engines and their features. They will evaluate 17th century fire engines to inform their design. They will then design and create their own with wheels, axels and a chassis. **Sequence of learning**	**Structure: Thrones** **Intent:** Children will learn to think like engineers and design a throne fit for a king. They will consider special features required of the throne and its purpose. They will the work together to create the design. **Sequence of learning.** 1. How can we ensure the throne is stable?	**Food: A Balanced Diet** **Intent:** The children will learn what makes a healthy diet and why this is important. The children will taste different products in order to design a healthy wrap. They will use this knowledge to design and then create a warp of their own. **Sequence of learning**

	1. What do modern fire engines look like and what features do they have? 2. What are wheels, axels, chassis and how can we attach them? 3. What will the body of your engine look like? What materials would be best? 4. Design a fire engine to include wheels, axels, chassis and body. 5. Can you follow your design to make the engine? 6. What improvements would you make after evaluating your engine? **Vocabulary** Vehicles, wheels, axels, chassis, engine, windows, siren, hose, materials, design, product, purpose.	2. What materials will be strong enough? Can we make them stronger? 3. Can you use tools and materials appropriately to make your design? 4. Can you modify your throne to improve it following a test? **Vocabulary** Design criteria, products, man-made, natural, structure, properties, stability, stable, shape, model, test, evaluate.	1. Are all drinks healthy? 2. What fruit and vegetables go together? 3. What do I need to think about when designing a healthy wrap? 4. Can I use equipment safely to make a wrap? 5. Did my wrap meet the success criteria? 6. What could I do to improve? **Vocabulary** Balanced, diet, carbohydrate, fruit, dairy, ingredients, oils, sugar, protein, vegetable.
Year 1&2 Cycle B	**Textiles: delightful decorations** **Intent:** Pupil will develop their cutting and sewing skills to make a Xmas decoration. They will evaluate what made a good decoration and practise the skills needed to make one. They will then use this knowledge to design and make their own. **Sequence of learning:** 1. Evaluate different decorations. 2. Practise cutting skills on paper and fabric. 3. Sewing skills. Thread a needle and use a running stitch. 4. Sewing Skills. Overstitch and attach 2 pieces of material. 5. Design a decoration. 6. Make the decoration applying skills practised. 7. Celebrate and evaluate. **Vocabulary** Tools , colour, shape, material, thread, snip, cut, stitch, attach.	**Mechanisms: Moving parts picture** **Intent:** In this unit children will develop design and evaluate a moving part picture using pivots, levers and linkages to develop a picture with moving parts. **Sequence of learning** 1. How do pivots, levers and linkages allow objects to move? 2. What different types of linkage system can I use to help me design my picture? 3. Can I create a design that has linkages, pivots and levers and is eye catching? 4. Can I make my picture to my design? 5. What went well and what improvements could I make? **Vocabulary** Axle, design criteria, input, linkage, mechanical, output, pivot, wheel	**Structure: Boats** **Intent:** In this unit pupils will learn to make a boat with sails to meet design criteria. They will learn how to make robust structures, adding weight and supporting structures, then incorporate this in their design. Finally, they will make, float and evaluate their boat constructions. **Sequence of learning** 1. What different designs of boat will help us to create our own design? 2. How do I use tools and equipment efficiently to create a boat hull? 3. Designing the sails? 4. How can I attach different parts to a structure? 5. Did my boat float? What improvements could I make? **Vocabulary**
Year 3&4 Cycle A	**Mechanical system : Pneumatic toys/ Sling shots** **Intent:** In this unit children will build on their understanding of mechanisms from KS1 to: Explore pneumatic systems, then apply this understanding to design and make a pneumatic toy including thumbnail sketches and exploded diagrams. **Sequence of learning:** 1. How do pneumatic systems work? 2. How can I include a pneumatic system in a toy design?	**Cooking and Nutrition: Adapt a recipe – Pasty** **Intent:** In this unit children will use their knowledge of healthy diets from KS1 to: research different types of pasty that are available. Then plan and make their own creation. **Sequence of learning:** 1. Is there any only one type of pasty? Evaluation of products. 2. How do I budget for and select the appropriate ingredients? 3. How will I market and package my new pasty? 4. Making the new pasty.	**Structures: Pavilions** **Intent:** In this unit pupils will build upon their knowledge of how to make string robust structures from KS1 to: Investigate and model frame structures to improve their stability, then apply this research to design and create a stable, decorated pavilion. **Sequence of learning** 1. What different types of frame structure could I use for a robust pavilion? 2. What will I need to consider when designing a pavilion?

	3. How do can I make my own pneumatic system? 4. How does my final idea compare with my design? **Vocabulary** Mechanism, lever, pivot, linkage system, pneumatic system, input, output, component, thumbnail sketch, research, adapt, properties, reinforce, motion	5. What was successful and what would I change? **Vocabulary** Adapt, appearance, budget, pastry , pasty , Cornish, Protected status , Cut, Crimp, bake, design, evaluate, hygiene, ingredients, market research, modify, sieve, sift, target audience.	3. How will I turn my design into a real life model? 4. How can I reinforce and improve the appearance of my pavilion? 5. How successful was my design and build process? **Vocabulary** 3D shapes, Cladding, Design criteria, Innovative, Natural, Reinforce, Structure
Year 3&4 Cycle B	**Digital world:** **Mindful timer** **Intent:** Childre will begin to use digital technology as part of the design and build process. They will: explore what is meant by mindfulness and write design criteria to fulfil a brief to develop a programmed product for timing a mindful moment. **Sequence of learning:** 1. To create design criteria for an electronic timer based upon existing products. 2. To use programming knowledge to instruct a microbit to function as a timer. 3. Toi design and develop a prototype case for the timer. 4. Design a logo for the timer using computer-based program. 5. What would I keep the same and what would I change next time? **Vocabulary** Research, criteria, design, ergonomic, program, loop, coding.	**Electrical system: Poster** **Intent:** This unit introduces children to various forms of 'Information design' before they are briefed to develop an electric museum display based on the Romans. They will learn how to integrate a simple electrical system into their designs and creations. **Sequence of learning** 1. What is the purpose of information design? 2. How does research help us develop our ideas? 3. How do we develop an idea into a final design? 4. How do I build and incorporate a simple circuit into my design? 5. How successful was my design and build process? **Vocabulary** information design, design, public, design criteria, research, sketch, self-assessment, peer assessment, feedback, develop, final design, electrical system, electric product, circuit.	**Textiles: Cross-stitch and appliqué: Egyptian collars** **Intent:** Having learnt the basics of sewing and decorating fabric in key stage one, this unit builds on the children's repertoire by introducing two new skills: cross-stitch and appliqué. After learning these techniques, the children apply their knowledge to the design, decoration and assembly of their very own Egyptian Usekh /Wesekh collars to represent their unique personalities. **Sequence of learning** 1. What is cross-stitching and appliqué? 2. What will I need to include in a design and a template for my collar? 3. Can I cut and assemble fabric parts into a product? 4. How to use cross-stitching and appliqué to decorate a product? 5. How effective was my final design? **Vocabulary** Appliqué, cross-stitch ,fabric, running stitch, patch, thread, embellish, template, cotton, silk, polyester, wrinkle ,tear, water-resistant, breathable, matt, shiny, biodegrade
Year 5&6 Cycle A	**Structures - Bridge Building** **Intent** In this unit pupils will build upon the construction skills they have covered in previous years. They will Test and analyse various types of bridge to determine their strength and stability. Explore material properties and sources, before marking, sawing and assembling a wooden truss bridge. **Sequence of learning:** 1. What are Arch and Beam bridges and how can they be reinforced? 2. What are Truss bridges and how are they built? 3. What skills are needed to build a wooden Truss bridge?	**Textiles: Stuffed Toy** **Intent** In thus unit, pupils will design a stuffed toy and make decisions on materials, decorations and attachments (appendages), after learning how to sew a blanket stitch. **Sequences of learning** 1. What are the design criteria for designing a stuffed toy? 2. How do you sew a blanket stitch? 3. How you add details and appendages to a stuffed toy? 4. How do you assemble a stuffed toy? **Vocabulary**	**Electrical Systems – Steady hand game** **Intent:** In this unit children will build upon their knowledge of incorporating electrical systems from year 3&4 to: understand what is meant by fit for purpose design and form follows function. They will design and develop a steady hand game using a series circuit, including housing and backboard. **Sequence of learning** 1. What makes a successful children's game? Markey research. 2. What features do I need to include in a design for my steady hand game? 3. How will I construct a suitable base to mount my game? What will I need to consider?

	4. Can I complete a Truss bridge, reinforcing where necessary? 5. How successful was my design and build process? **Vocabulary** beam bridge, arch bridge, truss bridge, corrugation, lamination, stiffness, rigid, stability, visual appeal, aesthetics, joints, hardwood, softwood, reinforce	Accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template	4. How will I assemble an electrical circuit fit for purpose and fix it to my base? 5. How successful was my design and build process? **Vocabulary** Circuit, circuit symbol, component, conductor, copper design criteria, evaluation, fit for purpose, form, function, insulator, LED, user.
Year 5&6 Cycle B	**Cooking and Nutrition: Bolognese** **Intent:** In this unit, children will learn a simple bolognese recipe and adapt it to improve nutritional content. **Sequence of learning** 1. How are ingredients reared and processed? 2. What adaptations can be made to create a recipe? 3. How do I evaluate nutritional content? 4. How do I prepare food? 5. What should be included on a product label? 6. Can I follow a recipe? **Vocabulary** abattoir, balanced, beef, cross-contamination enhance equipment evaluate farm, grate, cut	**Mechanical Systems: Mechanical Toy** **Intent:** Children will build on their knowledge of mechanisms from year 3&4, drawing on linkages and levers to develop a functional automata window display, to meet the requirements in a design brief. They will explore and create cam, follower and axle mechanisms to mimic different movements. **Sequence of learning** 1. How do I accurately prepare wood from assembly by measuring and cutting each piece? 2. How does an exploded diagram help me to assemble a 3D frame? 3. How do cams work and how can I incorporate their function into my design? 4. How can I create a housing and ensure my product meets the brief of entertaining? 5. How successful was my design and build process? **Vocabulary** assembly-diagram, Automata, axle, bench hook, Cam, dowel, exploded-diagram, finish, follower, frame, function, mark out, mechanism, tenon saw	**Digital World: Navigational device** **Intent:** Children will design and program a navigation tool to produce a multifunctional device for trekkers using CAD 3D modelling software. They will then pitch and explain the product to a guest panel. **Sequence of learning** 1. How do I write a design brief and criteria based on a client request. 2. How do I write a program to include multiple functions as part of a navigation device. 3. How do I develop a sustainable product concept. 4. How do I use 3D CAD skills to produce a virtual model. 5. Can I present a pitch to 'sell' the product to a specified client. **Vocabulary** Smart, smartphone, Navigation, cardinal compass, pedometer, GPS tracker, design brief, design criteria, client, function, program, duplicate, replica, loop, variable, value, sustainable design, environmentally friendly, biodegradable, recyclable, product lifecycle, product lifespan