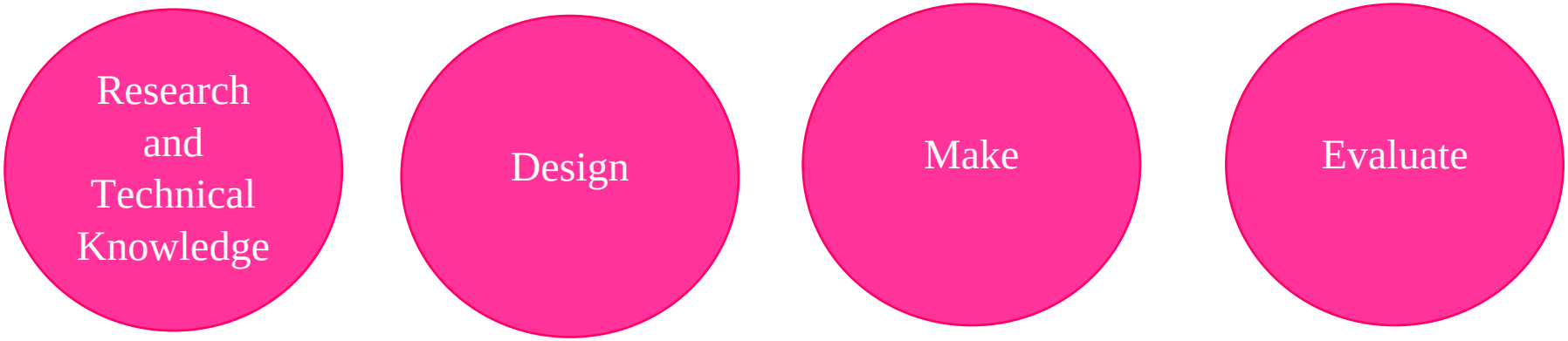
Design and Technology

Key Concepts and Breadth of Study



In order to maximize learning time we hold design and technology weeks three times a year. The children get to fully immerse themselves in their focus area of design and technology before proudly sharing their creations with their parents. Children will be expected to follow the four-step process of research, design, create and evaluate.

	Autumn	Spring	Summer
EYFS	**Research/Design/Make/Evaluate** Children construct with a purpose in mind to achieve a planned effect. The creative and construction areas provide materials and equipment in order to access the objectives in the continuous provision. Sticky Knowledge Adults work with children to help facilitate the creation of large scale models by questioning and encouraging them to think through e.g. *a fire engine, Evil Pea trap.* Chn use various construction materials (mobilo, lego, duplo, blocks are available in CP) To begin to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces (model making in CP e.g. building their dream house, building the 3 little pigs house, making bear dens	**Research/Design/Make/Evaluate** Children construct with a purpose in mind to achieve a planned effect. Sticky Knowledge The creative and construction areas provide materials and equipment in order to access the objectives in the continuous provision. Chn use various construction materials (mobilo, lego, duplo, blocks are available in CP) To begin to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces (model making in CP e.g. making bear dens making rockets and spaceships) To joins construction pieces together to build and balance. To discover that tools can be used for a purpose. Children manipulate materials, using different tools and techniques, to achieve a planned effect. Make use of props and materials when role playing characters in narratives and stories.	**Research/Design/Make/Evaluate** Children construct with a purpose in mind to achieve a planned effect. Sticky Knowledge The creative and construction areas provide materials and equipment in order to access the objectives in the continuous provision. There are design sheets in available in the construction area for children to use if they wish. To joins construction pieces together to build and balance. To discover that tools can be used for a purpose. Children manipulate materials, using different tools and techniques, to achieve a planned effect. Make use of props and materials when role playing characters in narratives and stories.

Year 1	**Sewing – Finger puppets** **Research and Technical knowledge** Finger puppets **Acquire / Research new skills** stiches **Design** Design a finger puppet based on an animal. **Make** Make a finger puppet using stiches. **Evaluate** Evaluate their creation against their plan and consider what went well and what could be changed for next time. **Sticky knowledge** Running stitch **Prior Knowledge**	**Structure: Toys** **Research and Technical knowledge** Victorian toys **Acquire / Research new skills** Types of Victorian toys – spinning toppers **Design** Design a Victorian toy which includes a moving mechanism. **Make** Use plan to create a Victorian toy including a moving part using a mechanism. **Evaluate** Evaluate their creation against their plan and consider what went well and what could be changed for next time. **Sticky knowledge** Moving mechanism **Prior Knowledge** **EYFS –** assembling and creating using recyclable materials	**Cooking: Smoothies** **Research and Technical knowledge** Healthy smoothies **Acquire / Research new skills** Research good nutrition and what is needed for a healthy diet. Cutting practice **Design** Plan the fruits they will include in their smoothie. **Make** Cut the fruit and make their smoothie. **Evaluate** Taste the smoothie and comment on what they liked about it and what they would change next time. **Sticky knowledge** Cutting safety Healthy foods **Prior Knowledge** EYFS – crumble, pizza
Year 2	**Cooking – Making Cakes** **Research and Technical knowledge** Research cakes on the market and different recipes. Learning about the nutrition within cakes. **Acquire / Research new skills** Whisking, measuring , cracking eggs, product design, different decorating techniques **Make** Children make their chosen cake using the measuring skills and decorating skills they designed	**Structure – Make a swing** **Research and Technical knowledge** Look at different swings in the local area and the structure / shape of the frame etc **Acquire / Research new skills** Joining, gluing, building structures to explore which is the strongest material and shape to use. **Make** Use their research results to create a new prototype swing **Evaluate**	**Catapults** **Research and Technical knowledge** Research different designs of catapults and how effective they are and why? Any key common features (a long arm etc) Hinge points and how to make them, the different impact different strength and length elastic bands has on the hinge. The length of the catapult will impact its difference. **Acquire / Research new skills** Joining, cutting wood to the correct length, creating a hinged point

	Evaluate Children evaluate if their final products looks, tastes and compares to their design **Sticky knowledge** Measuring, considering market research, product design **Prior Knowledge** EYFS – Cooking crumble and pizza. Year 1 - Smoothies	Evaluate the strength and stability and how they would further improve their swing. **Sticky knowledge** Strong structures and how to create them through joining **Prior Knowledge** EYFS – Junk modelling, make vehicles. Year 1 – Victorian Toys	**Make** Children to make their own catapult using the research they have required https://www.youtube.com/watch?v=Zg1Pz0WUMW4 **Evaluate** Children to evaluate how successful their catapult is based on their research. Did their item go as far as they wanted, what would have made it fly further **Sticky knowledge** Hinge points Joining Cutting wood **Prior Knowledge** EYFS – Junk Modelling Year 1 – Victorian toys, moving pictures.
Year 3	**Making a stone age village** **Research and Technical knowledge** Gift boxes Research different nets and what 3D shapes they create **Acquire / Research new skills** Using nets to make boxes **Design** Design a gift box using a net, design the outside and the box net. **Make** Draw, cut out and assemble a box net and decorate the outside using their design. **Evaluate** What worked well What did they find difficult How could they improve it? What would they do differently? **Sticky knowledge**	**Pneumatic moving animals** **Research and Technical knowledge** What are pneumatics? How do Pneumatics work? What things use pneumatics? **Design** A bee or bee hive that moves using a pneumatic system (deflated balloon and pump) **Make** Draw, cut out and assemble bee or bee house and attach balloon and pump so that animal moves in some way when the balloon is inflated/deflated. **Evaluate** What worked well What did they find difficult How could they improve it? What would they do differently?	**Making Greek Ciabatta Bread** **Research and Technical knowledge** What foods are associated with Greece. Different types of bread. **Design** What shape will their bread be? What topping will they put on their bread? **Make** Mix bread and add yeast, observe the bread rising and the change as it cooks. **Evaluate** Taste and appearance What would they do differently? **Sticky knowledge** Different foods. Not all breads are the same. **Prior Knowledge**

	Shape nets. Assembling process. Handling scissors safety **Prior Knowledge** EYFS – Shapes Year 1 – 3D shapes. Year 2 – 3D shapes/maths.	**Sticky knowledge** Knowledge of how pneumatics work Handling scissors Process of assembling in order. **Prior Knowledge** EYFS – assembling and creating using recyclable materials Year 1 - Victorian toys, moving pictures. Year 2 – Catapults	EYFS – crumble, pizza Year 1 - healthy eating - smoothies Year 2 - Cakes
Year 4	**Cross stitch Christmas cards** **Acquire / Research new skills-** Practice running stitches, diagonal stitches and cross stitches on sampler. **Design-** Christmas design using different stitches learnt. **Make-** Sewing Christmas design onto Binka using different coloured threads. **Evaluate-** What worked well/ didn't work well. What stitches did they enjoy and find easy. What stitches did they find difficult. What would they do differently if they were to do it again? **Sticky knowledge-** running stitch, diagonal stitch, threading a needle, starting and stopping, cross stitch. **Prior Knowledge** Year 1 – finger puppets	**Mechanisms – Moving cars** **Acquire / Research new skills** Research slingshots and wheels and axels. **Design** Design a slingshot car. **Make** Create a moving car using axels and a stable chassis. Children create a 'shell' for their car using a given template. **Evaluate** How well did the car move/glide? How well did the slingshot work? What would you change if you were to do this again? **Sticky knowledge** The importance of axels which are straight and equal. Attaching wheels to axels. Creating a stable chassis. **Prior Knowledge**	**Electrical circuits** **Acquire / Research new skills** Research and practice building circuits. **Design** Design gameshow and how they could incorporate their circuit. **Make** Make the show sign with bulbs and use buzzers (simple system) to show when answers are correct/incorrect. **Evaluate** What went well? EBI **Sticky knowledge** Series circuits Bulbs Buzzers **Prior Knowledge**

Year 5	**Mechanisms – pop up books** **Research and Technical knowledge** Features of pop-up books **Acquire / Research new skills** Prototypes V-Fold Slide Floating Plane Lift the flap **Design** A Christmas themed pop-up storybook **Make** To make a Christmas themed pop-up book **Evaluate** What worked well What was difficult What I would change **Sticky knowledge** To make and use the different types of folds **Prior Knowledge** Year 2/3 pneumatics moving animals	**Cooking – Vegetable pottage** **Research and Technical knowledge** Different meals eaten during the Tudor Era **Acquire / Research new skills** Hygiene, Chopping, Dicing, Slicing, Mixing, Cooking **Design** A vegetable based Tudor Pottage **Make** Make the vegetable based Tudor pottage **Evaluate** What worked well What was difficult What I would change **Sticky knowledge** Safe food prep Hygiene around food Safe use of utensils **Prior Knowledge** EYFS – crumble, pizza Year 3 – cooking bread Year 1 – healthy easting smoothies	**Sewing – Stuffed animals** **Research and Technical knowledge** Different designs of stuffed animals **Acquire / Research new skills** Running stitch, Whip stitch, Back stitch **Design** To design a stuffed animal or cushion **Make** A stuffed animal or cushion **Evaluate** What worked well What was difficult What I would change **Sticky knowledge** To create a template To use a different range of stitches Running stitch Whip stitch Back stitch **Prior Knowledge** Cross stitch in year 4 Year 1 – finger puppets
Year 6	**Structures – Anderson Shelters** **Research and Technical knowledge** Structures, building design, triangles, What is an Anderson Shelter? Why were they important? **Acquire / Research new skills** Structures Design 3 different types of Anderson shelters **Make** Make their Anderson Shelter	**Technology – Design** **Research and Technical knowledge** 3D Computing Design Research the construction of Maya Temples and what they were used for. **Acquire / Research new skills** To learn how to use Tinkercad – grouping, resizing, moving shapes on a 3D space. Combining different shapes to make complex shapes. **Design**	**Sewing - Clothing** **Research and Technical knowledge** Upcycling Clothing – Textiles linked to designing, making and evaluating their costumer for the Y6 production. Costumes linked their allocated role **Acquire / Research new skills** Sewing skills, pattern layout, decorating fabrics **Design** 3 different designs for their costume – choose 1 and justify choice.

	Evaluate Test their Anderson Shelter by dropping bean bags on them. Was their Anderson Shelter robust enough to withstand the impact of a "bomb"? Was the design camouflaged and "black-out" ready? **Sticky knowledge** Triangles and arches make stronger structures. Importance of reinforcement. **Prior Knowledge** Year 2/3 – gift box structures	Design 3 different Maya temples on paper and decide which one their want to make on Tinkercad, justifying their reasons why they chose it. **Make** Using Tinkercad, make their Maya temple **Evaluate** Evaluate their Temple with a Partner and identify the skills that they have used to create it. **Sticky knowledge** Layering of shapes to make complex 3D shapes. Use of Tinkercad. **Prior Knowledge** Computing knowledge Designing – across all year groups	**Make** Make costume using the skills acquired **Evaluate** How well did their costume meet the design criteria and the aesthetics and durability for the performance? **Sticky knowledge** Use of pin-tacking and selection of appropriate stitches to ensure durability of finished item. **Prior Knowledge** Year 5 – stuffed animals Year 4 – cross stich Year 1 – finger puppets