St Joseph's and St Gregory's Progression of Skills and Knowledge in Design and Technology

The document below sets out the way in which the Design and Technology curriculum will be covered at St Joseph's at St Gregory's Primary School. For information on EYFS please see the separate planning document.

For each project a brief will need to be created. This should detail the product, person and purpose. Children should know what they are making, who it is for and why they need it.

Textiles Mechanisms Structures Cooking and Nutrition

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn	A2 - Mechanism – moving book page	A2- Textiles – finger puppet	A1- Textiles – Cuddly toy	A2- Structure – Gift Box	A1 - Cooking and Nutrition – bread	A2 - Mechanisms– light up Christmas decorations
NC Objectives	• design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through drawing • explore and use mechanisms • select from and use a range of tools and equipment to perform practical tasks • evaluate their ideas and products against design criteria	• design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through using templates • select from and use a range of tools and equipment to perform practical tasks • evaluate their ideas and products against design criteria	• generate, develop, model and communicate their ideas through discussion, annotated sketches • select from and use a wider range of tools and equipment to perform practical tasks accurately • select from and use a wider range of materials and components, according to their functional properties and aesthetic qualities • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	• use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through computer-aided design • select from and use a wider range of tools and equipment to perform practical tasks accurately • select from and use a wider range of materials and components according to their functional properties and aesthetic qualities	• prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. • use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • select from and use a wider range of materials and components according to their functional properties	• use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through sketches. • understand and use electrical systems in their products [for example, series circuits • incorporating switches, bulbs, buzzers and motors] • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

				• apply their understanding of how to strengthen, stiffen and reinforce more complex structures	and aesthetic qualities • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	• select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
Core Vocabulary (the three P's – Product, Purpose and Person and not listed but should be in all DT topics)	slider, pulley, lever with pivot, plan, evaluate, brief	template, fabric, running stitch, sew	back stich, cross stich, stuffing, embellishment	accuracy, net, Computer Aided Design, market research	food sources, active ingredients, kneed, prove, season, bake	circuit, power source, aesthetic, seasonal
Component Knowledge	1. Examine and annotate the brief 2. Skill – Mechanism – slider, lever with pivot 3. Plan nativity page – Drawing 4. Create final product using paper, card 5. Evaluate against brief	1. Examine and annotate the brief 2. Skill – template, cutting fabric, running stitch, glue on finishing touches 3. Plan finger puppet - templates 4. Create final product using cotton or similar fabric base 5. Evaluate against brief	1. Examine and annotate the brief 2. Skill – template, cutting fabric, running stitch and back stitch, stuffing. Sew some finishing touches - cross stitch 3. Plan cuddly toy – Annotated sketch 4. Create final product using thicker fabrics e.g. felt, Calico	1. Examine and annotate the brief 2. Complete market research 3. Skills - measuring accurately, joining net building 4. Plan – using CAD (Tinker CAD) 5. Create final product 1. Evaluate against brief	1. Examine and annotate the brief 2. History of bread 3. Food sources - food miles, where food comes from around the world 4. Skill - mix, kneed, prove, season, chop (e.g. herbs) Bake 5. Create final product 6. Evaluate against brief	1.Examine and annotate the brief 2.Skill – Mechanism – electrical circuit made from wires, battery, light bulbs, 3.Plan product – Annotated sketch 4.Create final product using card and electrical equipment. 5. Evaluate against brief

			5. Evaluate against brief			
Brief	Dear Children Christmas is coming and I would like to share a book about the nativity story with the whole school. I would also like the book to be shared with the Conkers and Sycamores. I want the book to contain surprises, so it needs to include a lever, a lift and a flap. Please make it as colourful as you can. Thank you Mrs Otter	Retelling stories is a key part of our learning. In order to support children in the school to retell stories we use story sacks. We need to create a story sack for "the day the crayons quit". Your challenge is to create a finger puppet to represent one of the crayons in the story. Your puppet needs to be strong so that it can be played with, it needs to show the characteristics of your chosen crayon and have running stitch to join it together.	We are going to be making a reading buddy cuddly toy. We are going to be making it for a classroom reading area in a KS2 classroom. It needs to soft enough to cuddle but sturdy enough to last with lots of children using it. It must link to a story and have additional embellishments. Final Product – This does not need to be revealed until the planning stage so as not to interfere with book reveals. White elephant cuddly toy with embellishments of 'throw blanket' and eye.	Mrs Otter needs your help to make some gift boxes for some presents. Your gift box must fit the gift inside, protect the gift and include a festive design. Mrs Otter is very conscious of the environment so she would like you to just a little packaging as possible. She has bought gifts for 50 people so the boxes should be quick and easy to open and close.	Mrs Marianna wants a new bread to be made to accompany a new dish she is making for our school menu. The dish is a flatbread pizza. She would like you to research and make a flatbread to help her decide. Your flatbread must also have a seasoning either mixed into or sprinkled on top of the dough.	As part of the school's celebrations for the Christmas festival, we are inviting students to design and create festive, light-up Christmas tree decorations that will be displayed around the school. Your decoration should include at least one LED light that will turn on when connected to a power source, be made using card and simple electrical components, be appropriate for display in public areas around the school (e.g., in hallways, the school entrance, or the library).
Spring	S1 - Structures – scarecrow	Cooking and nutrition – pies	Mechanism – Litter Picker	Spring 2 Mechanism – steady hand game	Structure – Bridge	Mechanism – moving animal toys
NC Objectives	• design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through mock-ups • select from and use a range of tools and equipment to perform practical tasks	• design purposeful, functional, appealing products for themselves and other users based on design criteria • select from and use a range of tools and equipment to perform practical tasks • select from and use a wide range of materials and components, including construction	• use research and develop design criteria to inform the design of innovative, functional, • appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through creating prototypes	• generate, develop, model and communicate their ideas through annotated sketches. • understand and use electrical systems in their products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	• investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped	• use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their

	• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics • Explore and evaluate a range of existing products • Evaluate their ideas and products against design criteria • Build structures, exploring how they can be made stronger, stiffer and more stable	materials, textiles and ingredients, according to their characteristics • use the basic principles of a healthy and varied diet to prepare dishes	• select from and use a wider range of tools and equipment to perform practical tasks • understand and use mechanical systems in their products		• use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through computer-aided design	ideas through exploded diagrams • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
Core Vocabulary	robust, re-use, annotate, shaping, cutting, prototype	recipe, rolling, filling, healthy, unhealthy, ingredients, sweet, savoury	pivots, linkages, mechanism, stewardship, measure	electronics, components, fine motor skills, scale drawing	engineer, Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Rearrange	movement, cams, centre of rotation, durable
Component Knowledge	1. Examine and annotate the brief 2. Evaluate existing products focussing on the brief 3. Plan – create a plan in groups – Drawing	1. Examine and annotate brief 2. Research – what was a medieval banquet and what ingredients would they have had?	1. Examine and annotate the brief 2. Skill – Mechanism – pivots, levers and linkages 3. Plan – Using card and pins create a	1. Examine and annotate the brief 2. Skill – incorporating electronics into products 3. Plan – drawing and components list - 50	1. Explaining SCAMPER and examine and annotate the brief 2. Evaluate current bridge and compare with others	1.Examine and annotate the brief 2. Conduct research into animals to support product design.

	4. Skill – Cutting and shaping (using felt) - create a prototype 5. Create – in groups create a large scarecrow 6. Evaluate against brief	3. Healthy or unhealthy? 4. Plan - design recipe from list of ingredients in pairs 5. Skill - rolling (pastry), cutting, shaping and filling 6. Create product in pairs following plan 7. Evaluate against brief	prototype of final product in groups 4. Skill – cutting and shaping accurately (using dowels and balsa wood) 5. Create – in groups create a litter picker 6. Evaluate against brief	cm copper wire per child. 5. Create final product 6. Evaluate against brief	3. Individuals who have shaped the world – Isambard Kingdom Brunel 4. Plan – children to choose which element of SCAMPER to use 5. Skill - Design – using CAD (Tinker CAD) 6. Evaluate design against brief	3. Skill – material selection, joining and finishing, strengthening. 4. Using cams to move objects. 5. Plan product – Exploded diagram 6.Create final product 7. Evaluate against brief
	Watch Farmer Jack's video brief explaining that the children need to make a scarecrow to protect his crops. •It needs to look like a farmer because I know the crows are scared of me and I'm a farmer. •It needs to be robust so it doesn't fall apart in bad weather. •It needs to look scary to birds – the body should be bulky and the arms raised so it is visible. •It needs to be environmentally friendly – Reduce, reuse, recycle!	We are going on a journey through time. We are going to become bakers for the kings and queens. To celebrate his wedding Henry VIII would like us to prepare him a feast of sweet and savoury pies. Your pie must have a pastry base, be well filled and be fit for a king.	Mrs Otter has noticed that after lunch there is lots of litter on the playground. She needs our support to help to solve this problem. Children don't like picking up litter with their hands because it makes them dirty. The litter pickers we have in school are too long for the smaller children to use and the handles are too big for their hands. Your task is to design a litter picker that can be used by the children in Key Stage 1. Your litter picker must be robust, have a moving grabber at the end and be the right size.	Mrs Brown wants to improve handwriting across the school and wants you to design a fun game to help the children in KS1 to improve their Fine Motor Skills. The game needs to be fun, and promote children having a steady hand. When the children touch the wire with the wand, it should buzz.	It has been noticed that the bridge over the river in Queen's Park becomes very congested. There is often situations in which cyclists and pedestrians risk getting hurt as they cannot pass each other safely. Your task is to use SCAMPER to suggest ways in which this can be improved to make it safer for cyclists and pedestrians to use at the same time.	We know that children learn best through play. We want to educate children about endangered animals and their habitats. We need you to create a moving animal toy that children aged 9-11 can play with to rise awareness of endangered species. Your toy needs to have at least 2 moveable parts, showcase and endangered species and be robust enough to be played with.
Summer	Cooking and nutrition – fruit salad	Mechanism – Wheels	Cooking and nutrition – pasta salad	Cooking and nutrition – healthy snacks – crudites and dips	Textiles – pencil case	Cooking and nutrition – Pizza inc. dough
NC Objectives	• design purposeful, functional, appealing products for themselves and other users based on design criteria	• design purposeful, functional, appealing products for themselves and other users based on design criteria	• understand and apply the principles of a healthy and varied diet • investigate and analyse a range of existing products	• understand and apply the principles of a healthy and varied diet • prepare and cook a variety of predominantly	• use research and develop design criteria to inform the design of innovative, functional, • appealing products that are fit for purpose, aimed at	• understand and apply the principles of a healthy and varied diet • prepare and cook a variety of predominantly

	• generate, develop, model and communicate their ideas using information and communication technology • understand where food comes from.	• generate, develop, model and communicate their ideas through drawing. • explore and use mechanisms • evaluate their ideas and products against design criteria	• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • use research and develop design criteria to inform the design of innovative, functional, • appealing products that are fit for purpose, aimed at particular individuals or groups	savoury dishes using a range of cooking techniques • understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. • generate, develop, model and communicate their ideas through exploded diagrams, • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated • sketches • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities • evaluate their ideas and products against their own design criteria and consider the • views of others to improve their work	savoury dishes using a range of cooking • techniques • understand seasonality
Core Vocabulary	seasons, grow, sweet, sour, bitter, chop, cut, mix	chasis, wheels, axle, frame, testing	Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Rearrange	mix, mash, toast, cut, exploded diagram, crudites	chain stitch, strengthening, stiffening, fastening	Plaiting, rolling flat, rolling to create a spiral, twisting, dough
Component Knowledge	1. Discuss and dissect the brief 2. Understand where different fruits are grown and seasonality	1. Examine and annotate the brief 2. Skills – using wheels and axles, joining a frame 3. Plan - What size wheels?	1. What makes a healthy diet? 2. Explaining SCAMPER and examine and annotate the brief	1. Examine and annotate the brief 2. Analysis of health information on existing products	1. Examine and annotate the brief 2. Skill – template, cutting fabric, running stitch, back	1. Examine and annotate the brief 2. Skills – Plaiting, rolling flat, rolling to create a spiral, and twisting dough

	3. Taste fruit to support the development of planning 4. Skills – chop, cut and mix 5. Design product – using ICT (PurpleMash) 6. Create product 7. Evaluate against the brief	4. Create a prototype - Structure of vehicle, joining parts of frame with card triangles and glue. 5. Product testing – comparing different size wheels 6. Evaluate based on testing.	3. Evaluate current pasta salads and compare ingredients using SCAMPER 4. Design own pasta salad – exploded diagram 5. Evaluate against design brief	3. Food sources – fresh and processed 4. Skill - mix, mash, toast, cut 5. Plan final product – Exploded diagram 6. Create final product using yogurt mixed with e.g. mint, cucumber, avocado. Serve with toasted bread/pitta, veg sticks 7. Evaluate against brief	stitch, chain stitch, strengthening and stiffening and adding buttons 3. Plan pencil case Annotated sketch 4. Create final product 5. Evaluate against brief	3.Plan product – Annotated sketch and instructions 4.Create final product 5. Evaluate against brief
Brief	Healthy schools' week is coming up. In order to celebrate this we are going to be making a fruit salad for our playtime snack. Our salads need to contain our classes favourite fruits. The fruits need to be in season now. They also need to be cut into bite sized pieces so that it is easy to eat outside.	Jacob and Leo love racing their toys in their bedroom. They always argue over which car is the fastest. Jacob thinks it's the truck because it has big wheels. Leo thinks it is the toy car because it has small wheels. In order to settle their argument, you need to create some toys with different sized wheels that you can test and report back on.	Pasta salad meals are available in lots of different shops offered as an easy lunch choice. Upon inspection it was noticed that they often contain additional additives and ingredients which reduce the healthiness. We are going to look at one of these meals and see what we can do to improve it. It needs to be low in salt and sugar, contain at least 3 fresh vegetables and have a sauce.	To celebrate the end of term we are going to have a class part. Mrs Otter said that we can have some snacks as longs as they are healthy. We are going to make crudites and some dips to dunk them in. Our food needs to be healthy, tasty and sharable. It also needs to be something we can eat with our hands easily and suitable for vegetarians.	In order to get to know you better, the teachers in Year 6 would like you to make a pencil case. It needs to be personal to you and show who you are. You will need to use a variety of stitches and it must fasten to keep your supplies safe. Your pencil case needs to be robust so that it lasts at least a year.	To celebrate everything that you have done in year 6 we are going to have a class party. We want to have some pizza but we cannot decide which type. The pizza needs to be able to be shared between lots of people or be made in individual portions. It needs to be a food that can be eaten without cutlery and it needs to be suitable for vegetarians.

Year 6 End of Year Project	What Message Will Your Billboard Send? From the Nuffield Foundation, this resource contains a series of teacher support sheets and student record sheets that provide seven and a half hours work. In this activity, children work in groups to design and make a moving billboard for a specific purpose within their school or classroom. The project gives children the opportunity to apply what they have previously learned about computer control during ICT lesson time. During this activity, children will: * generate ideas for a product after thinking about what it will be used for * mark, measure, cut and join materials with increasing accuracy

	* use a variety of tools with precision and care * use gears to provide a transmission system * use ICT control software and a control interface box to control a motor and lights * use input from sensors to monitor events and respond to them * use ICT to produce good quality graphics * work as a group. https://www.stem.org.uk/resources/elibrary/resource/30735/what-message-will-your-billboard-send