Design and Technology curriculum- long term plan

All lesson plans on Kapow: adapt to needs of cohort and resources of school as necessary.

Year group	Area of learning	Teaching ideas- see Kapow for lesson plans	School Curriculum objectives
Reception	Food: Soup	• To explore fruits and vegetables and the differences between them. • To use adjectives to describe how fruits and vegetables look, feel, smell and taste. • Learn new vocabulary. • Use new vocabulary throughout the day. • See Kapow unit.	To understand that there are different types of food and that some food grows as plants. To understand that some food is good for you and some food is not good for you. To understand that food can be processed in different ways so that it can be eaten.
	Textiles: Bookmarks	• Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials. • Developing fine motor/cutting skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading. • Reflecting on a finished product and comparing to their design. • To know that a design is a way of planning our idea before we start. • To know that threading is putting one material through an object.	To use scissors to cut a specific shape. To weave a thread in and out using the under over technique. To reflect on their finished design stating two things they liked and one thing they would change.
	Structures: Boats	Making a boat that floats and is waterproof, considering material choices. Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently.	Can discuss how the shape and structure of a boat affect the way it moves. Can know that some objects float and others sink. Can name some parts of a boat.
Year 1	Structures: Windmills- DT day	See Kapow/ unit overview Identify some features that would appeal to the client (a mouse) and create a suitable design. Explain how their design appeals to the mouse. Make stable structures, which will eventually support the turbine, out of card, tape and glue. Make functioning turbines and axles that are assembled into the main supporting structure. Say what is good about their windmill and what they could do better. (A child can excel at this objective, even if their windmill did not work, if they can evaluate what they might do differently. If there is opportunity within provision you may allow	Can make a stable structure from card. Can make a functioning turbine and axle within the structure. Can reflect on their construction stating what went well and what could have gone better.

		children the chance to continue to investigate these structures in their own time.)	
	Textiles: Puppets	See Kapow/ unit overview Join fabrics together using pins, staples or glue. Design a puppet and use a template. Join their two puppets' faces together as one. Decorate a puppet to match their design.	Can join fabrics together using pins staples or glue. Can create a puppet design, annotate it and use it to make a template. Can decorate their puppet according to their original design
	Mechanisms: Storybooks	Making a moving storybook. See Kapow/ unit overview Evaluation can be verbal or written, or can be done in small groups where the group discusses the strengths and weaknesses of their designs.	Can identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make. Can clearly label drawings to show which parts of their design will move and in which direction. Can make a moving book, which meets the design criteria, with parts that move purposefully as planned. Can evaluate the main strengths and weaknesses of their design and suggest alterations.
	Food: fruit and vegetables	Describe fruits and vegetables and explain why they are a fruit or a vegetable. This could be done through use of the Kapow scheme of work or through games. Name a range of places that fruits and vegetables grow children could bring in fruit and vegetable packaging or labels from home and you could compete to see which comes from furthest away. Describe basic characteristics of fruit and vegetables. Prepare fruits and vegetables to make a smoothie. - follow Kapow scheme- adjust as needed- see unit overview and recipes on Teams	Can start to describe the difference between fruits and vegetables and other types of food. Can accurately name where a variety of fruit and vegetables come from. Can safely uses a knife and chopping board to cut fruit and vegetables into suitable size pieces.
Year 2	Structures: Baby bear's chair	Making a chair that can support a teddy bear. See Kapow/ unit overview Identify man-made and natural structures. Identify stable and unstable structural shapes. Contribute	Can work independently to make a stable structure, following a demonstration.

		to discussions Explain how their ideas would be suitable for Baby Bear.	Can produce a model chair that supports a teddy, using the appropriate materials and construction techniques. Can explain what went well and how it could be improved.
	Food: A balanced diet	Designing and making a savoury wrap. - See Kapow/ unit overview and recipe on Teams.	Name the main food groups and identify foods that belong to each group. Describe the taste, texture and smell of a given food. Think of four different wrap ideas, considering flavour combinations. Construct a wrap that meets the design brief and their plan.
	Textiles pouches	Making a textile pouch with stiches. See Kapow/ unit overview.	Can sew a running stitch with regular-sized stitches and understand that both ends must be knotted. Can prepare and cut fabric to make a pouch from a template. Can use a running stitch to neatly join the two pieces of fabric together with small even stitches.
Year 3	Food: eating seasonally	Adapting a recipe: Making a rainbow tart. Follow Kapow scheme: see unit overview and recipe on in DT folder on Teams.	Can explain that fruits and vegetables grow in different countries based on their climates. Can explain why eating seasonal fruits and vegetables has a positive effect on the environment. Can demonstrate the basic rules of food hygiene and safety including using an appropriate hold while cutting with a knife. Can follow the instructions within a recipe.

	Textiles/ cushions Egyptian collars	Cross stich and applique: You can choose if you would like to use the Egyptian collars or the cushion scheme. See Kapow/ unit overview.	Can name some different types of fabric and describe what they are like. Can create a design that includes cross-stich and applique and produce a piece that reflects that design. Can use cross-stich as a decorative feature or to join two pieces of fabric together. Can applique a design using small even stitches to add interest to a piece.
	Structures: Castles	Making a 3D castle. See Kapow/ unit overview. Recognise that a castle is made up of multiple 3D shapes. Design a castle with key features which satisfy a given purpose. Score or cut along lines on the net of a 2D shape. Use glue to securely assemble geometric shapes.	Can draw a simple castle diagram and label the most common features. Can utilise skills to build a complex structure from simple geometric shapes. Can evaluate their work and the work of others by recognising what they have done well and identifying areas they could improve.
Year 4	Structures:	Creating a strong and stable helmet See Kapow/ unit overview.	Can research designs and discuss and evaluate what makes them stable . Can design a product that is strong, stable and aesthetically pleasing through annotated sketches, cross sectional or exploded diagrams. Can select appropriate materials and construction techniques to create a strong stable product.
	Electrical systems: torches	Can be incorporated into science electricity unit. Making a torch with a switch using electrical circuitry.	Understand and use electrical systems in their products.
	Textiles: Fastenings	Fabric book covers with a fastening. See Kapow/ unit overview.	Can identify the features, benefits and disadvantages of a range of fastening types.

			Can make a template for their book sleeve and use it to cut the fabric for their piece. Can sew a functioning product with a useable fastening. Can evaluate their work and the work of others by recognising what they have done well and identifying areas they could improve.
	Food adapting a recipe	Making biscuits; Improving a recipe. Follow Kapow scheme: see unit overview and recipe on in DT folder on Teams.	Can follow a recipe. Can describe some of the features of a biscuit based on taste, smell, texture and appearance. Can adapt a recipe by adding extra suitable ingredients to it. Can plan a biscuit recipe within a budget.
Year 5	Textiles: stuffed toys/ decorations	See Kapow/ unit overview. Design a stuffed toy, considering the main component shapes of their toy. Neatly cut out their fabric. Use blanket stitch to assemble their stuffed toy, repairing when needed. Identify what worked well and areas for improvement.	Can create a design and appropriate template for their stuffed toy/ decoration. Can join two pieces of fabric using a blanket stitch. Can use appliqué or decorative stitching to decorate the front of their stuffed toy.
	Food: what could be healthier	Research how bread is made and where the raw ingredients come from. Understand that there are different types of grain that have different nutritional qualities. You may like to compare ancient grains with modern grains- could open a discussion about soil depletion and how nutrients get into our food? Compare home-made recipes for staple foods with shop bought versions and discuss what the additional ingredients are and what they are for. How does this help us make healthier choices-This is an opportunity to discover why ultra processed foods are bad for us.	Can explain how bread is made from the farm to the plate. Can recognise that shop bought products often have additional ingredients that home-made food does not and can understand why these ingredients are present. Can adapt a recipe to make it healthier and explain the choices they have made.

		Work as a team to amend a white bread recipe (or any recipe if you like) with healthy adaptations. – (recognising that whole grains are better for you so swapping white flour for brown flour or mixing in other grains and seeds make a healthier option.) Make soda bread (does not require yeast or time for the bread to rise- see recipe in teams file) and butter (Shaking cream- see recipe in teams file). There is no Kapow unit for this. Feel free to achieve the objectives in any way you choose- games , posters, etc.	Can follow a recipe to produce soda bread and homemade butter.
	Structures: bridges	See Kapow/ unit overview. Identify stronger and weaker shapes. Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight. Cut beams to the correct size, using a cutting mat. Smooth down any rough-cut edges with sandpaper. Follow each stage of the truss bridge creation as instructed by their teacher. Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher. Lesson may need to be adapted to accommodate alternative materials such as wooden skewers, paper straws or strips of cardboard.	Can identify beam, arch and truss bridges and describe their differences. Can use triangles to create simple truss bridges that support a load (weight). Can identify some areas for improvement, reinforcing their bridges as necessary.
Year 6	Mechanisms	Gears, pulleys and levers. Understand how gears, levers and pulleys can change the amount of force required to move objects. - Use the Year 5 Kapow unit- gears and pulleys	Can understand how gears and pulleys can reduce the amount of force needed to move an object. Can use mechanical systems in designs for products.
	Electronic systems: steady hand game	Explain simply what is meant by ‘form’ (the shape of a product) and ‘function’ (how a product works). State what they like or dislike about an existing children’s toy and why. Learn about skills developed through play and apply this knowledge in a survey of one or more children’s toys. Identify the components of a steady hand game. Design a steady hand game of their own according to their design criteria, using four different perspective drawings. Create a secure base for their game, with neat edges, that relates to their design. Make and test a functioning circuit and assemble it within a case. Can be incorporated into science electricity unit.	Can understand and use electrical systems in their products.
	Digital programming of products	- TBC pending appropriate equipment and training.	
	Food: come dine with me.	Make a savoury meal. Where have these ingredients travelled from to make our food today? Research where the UK gets most of its food from. How much do we produce ourselves and what do we import.	Can describe and demonstrate precautions that need to be taken when handling some raw ingredients.

		Design a menu for a restaurant naming three courses and describing each to the customer. Consider who the customer is and use language suitable for the audience. How do restaurants make the food sound more appealing to us.	Can explain which of the ingredients are most local and which come from further away. Can follow a recipe with accuracy. Can market the recipes in a menu describing each course of the meal to customers.

Whole school DT day	Mechanisms		
Year 1	Wheels and Axles	Explain that wheels move because they are attached to an axle. Recognise that wheels and axles are used in everyday life, not just in cars. Identify and explain vehicle design flaws using the correct vocabulary. Design a vehicle that includes functioning wheels, axles and axle holders. Make a moving vehicle with working wheels and axles. Explain what must be changed if there are any operational issues.	Can make a stable structure from card. Can make a functioning turbine and axle within the structure. Can reflect on their construction stating what went well and what could have gone better.
Year 2	Fairground Wheel	Design and label a wheel. Consider the designs of others and make comments about their practicality or appeal. Consider the materials, shape, construction and mechanisms of their wheel. Label their designs. Build a stable structure with a rotating wheel. Test and adapt their designs as necessary. Follow a design plan to make a completed model of the wheel.	To design and label a wheel and follow a design plan to make a completed model of the wheel. To build a stable structure with a rotating wheel. To consider the designs of others and make comments about their practicality or appeal.
Year 3	Pneumatic toys	Draw accurate diagrams with correct labels, arrows and explanations. Correctly identify definitions for key terms. Identify five appropriate design criteria.	To draw accurate diagrams with correct labels, arrows and explanations To assemble their pneumatic system within the housing to create the

		Communicate two ideas using thumbnail sketches. Communicate and develop one idea using an exploded diagram. Select appropriate equipment and materials to build a working pneumatic system. Assemble their pneumatic system within the housing to create the desired motion. Create a finished pneumatic toy that fulfills the design brief.	desired motion and create a finished pneumatic toy that fulfils the design brief. To correctly identify definitions for key terms such as mechanism, pneumatic and compressed.
Year 4	Making a slingshot car	Work independently to produce an accurate, functioning car chassis. Design a shape that is suitable for the project. Attempt to reduce air resistance through the design of the shape. Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed. Construct car bodies effectively. Conduct a trial accurately and draw conclusions and improvements from the results.	To work independently to produce an accurate, functioning car chassis. To attempt to reduce air resistance through the design of the shape To conduct a trial accurately and draw conclusions and improvements from the results.
Year 5	Pop-up book	Produce a suitable plan for each page of their book. Produce the structure of the book. Assemble the components necessary for all their structures/mechanisms. Hide the mechanical elements with more layers using spacers where needed. Use a range of mechanisms and structures to illustrate their story and make it interactive for the users. Use appropriate materials and captions to illustrate the story.	To investigate and analyse a range of existing products. To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. To use a range of mechanisms and structures to illustrate their story and make it interactive for the users.
Year 6	Playground structures	Discuss what makes a good playground structure. (appealing, sturdy, safe, weatherproof, etc)	Can design and make a functional model of a single playground structure using 3d shapes.

		Design and make a functional model of a single playground structure using 3d shapes nets. (greater depth children may make their own nets to meet their design needs) Combine structures as a class to make a playground.	