Park Brow Primary School
Happy - Respect - Pride - Caring - Potential

Kapow Primary

Design and Technology

Skills and Knowledge Progression 2025-26

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	Making stable structures from card, tape and glue Following instructions to cut and assemble the supporting structure of a windmill Making functioning turbines and axles which are assembled into a main supporting structure Begin to use scissors to cut straight and curved edges and hole pinches to punch holes. Describing the purpose of structures, including windmills Learning how to turn 2D nets into 3D structures Learning that the shape of materials can be changed to improve the strength and stiffness of structures Understanding that cylinders are a strong type of structure that are often used for windmills and lighthouses Understanding that axles are used in structures and mechanisms to make parts turn in a circle	Generating and communicating ideas using sketching and modelling Making a structure according to design criteria Creating joints and structures from paper/card and tape Exploring the features of structures Comparing the stability of different shapes and structures Identifying natural and man-made structures Understanding that the shape of a structure affects its strength Knowing that materials can be manipulated to improve strength and stiffness Building a strong and stiff structure by folding paper	Designing a castle with key features to appeal to a specific person/ purpose Constructing a range of 3D geometric shapes using nets Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension Extending the knowledge of wide and flat based objects are more stable Understanding the terminology of strut, tie, span, beam Understanding the difference between frame and shell structure	Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect Building frame structures designed to support weight Creating a range of different shaped frame structures Selecting appropriate materials to build a strong structure and for the cladding Building on prior knowledge of net structures and broadening knowledge of frame structures Learning that architects consider light, shadow and patterns when designing Implementing frame and shell structure knowledge	Designing a stable structure that is able to support weight Creating frame structure with focus on triangulation Making a range of different shaped beam bridges Using triangles to create truss bridges that span a given distance and supports a load Independently measuring and marking wood accurately Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary Exploring how to create a strong beam Identifying arch and beam bridges and understanding the terms: compression and tension Finding different ways to reinforce structures	Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs Measuring, marking and cutting wood to create a range of structures Using a range of materials to reinforce and add decoration to structures Knowing that structures can be strengthened by manipulating materials and shapes Identifying the shell structure in everyday life (cars, aeroplanes, tins, cans) Understanding man made and natural structures
Vocab	Design, evaluation, net, stable, strong, test, weak, windmill	Function, man-made, mould, natural, stable, stiff, strong, structure, test, weak.	2D shapes, 3D shapes, design criteria, evaluate, façade, feature, net, recyclable, scoring, stable, strong, structure, tab, weak	Aesthetic, cladding, design criteria, evaluation, frame structure, function, inspiration, pavilion, reinforce, stable, structure, target audience, target customer, texture, theme.	Abutment, accurate, arched bridge, beam bridge, compression, coping saw evaluation, file, forces, mark out, measure, predict, reinforce, research, right-angle, shape, suspension, bridge, tenon saw, tension, test, truss bridge, weak.	Adapt, apparatus, bench hook, cladding, coping saw, design, dowel, evaluation, feedback, idea, jelutong, landscape, mark out, measure, modify, natural, prototype, plan, sketch, texture, user, vice, weak .

Mechanisms	Explaining how to adapt mechanisms, using bridges or guides to control the movement Designing a moving story book for a given audience Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move Creating labelled drawings Following a design to create moving models that use levers and sliders Adapting mechanisms Learning that levers and sliders are mechanisms and can make things move Identifying whether a mechanism • is a lever or slider and determining what movement the mechanism will make Learning that for a wheel to move it must be attached to an axle	Creating a class design criteria for a moving monster Designing a moving monster for a specific audience in accordance with a design criteria Selecting a suitable linkage system to produce the desired motions Selecting appropriate materials based on their properties Making linkages using card for levers and split pins for pivots Experimenting with linkages adjusting the widths, lengths and thicknesses of card used Cutting and assembling components neatly Selecting materials according to their characteristics Learning about mechanisms, input and output, lever and pivots. Learning how axels help wheels to move a vehicle	Designing a toy which uses a pneumatic system Developing design criteria from a design brief Generating ideas using thumbnail sketches and exploded diagrams Learning that different types of drawings are used in design to explain ideas clearly Building secure housing for a pneumatic system Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy Selecting materials due to their functional and aesthetic characteristics Manipulating materials to create different effects by cutting, creasing, folding, weaving Understanding how pneumatic systems work Learning that mechanisms are a system of parts that work together to create motion Understanding pneumatic systems	Designing a shape that reduces air resistance Drawing a net to create a structure from Choosing shapes that increase or decrease speed as a result of air resistance Personalising a design Measuring, marking, cutting and assembling with increasing accuracy Making a model based on a chosen design Learning that products change and evolve over time Learning that all moving things have kinetic energy Understanding that kinetic energy is the energy that something (object person) has by being in motion	Designing a popup book which uses a mixture of structures and mechanisms Naming each mechanism, input and output accurately Storyboarding ideas for a book Following a design brief to make a pop up book, neatly and with focus on accuracy Making mechanisms and/ or structures using sliders, pivots and folds to produce movement Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result Knowing that an input is the motion used to start a mechanism Knowing that output is the motion that happens as a result of starting the input Knowing that mechanisms control movement Describing mechanisms that can be used to change one kind of motion into another	Experimenting with a range of cams. Create a design for an automata toy based on a choice of cam to create a desired movement Understanding how linkages change the direction of a force Making things move at the same time Measuring, marking and checking the accuracy of the jelutong and dowel pieces required Measuring, marking and cutting components accurately using a ruler and scissors Assembling components accurately to make a stable frame Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set Using a bench hook to saw safely and effectively Exploring cams, learning that different shaped cams produce different follower movements Exploring types of motions and direction of a motion
Vocab	Assemble, design, fabric, glue, model, hand puppet, safety pin, stencil, template, axle, axle holder, chassis, evaluate, fix, model, wheel, test,	Evaluation, input, lever, linear motion, linkage, mechanism, motion, oscillating motion, output, pivot, reciprocating, motion, rotary motion, decorate, wheel, waterproof, strong, weak.	Exploded-diagram, function, input, lever, linkage, mechanism, motion, net, output, pivot, pneumatic system, thumbnail, sketch.	Aesthetic, air resistance, chassis, design, design criteria, function, graphics, kinetic energy, mechanism, net, structure.	Aesthetic, computer-aided design, caption, design, design brief, design-criteria, exploded-diagram, function, input, linkage, mechanism, motion, output, pivot, prototype, slider, structure, template.	Accurate, assembly-diagram, axle, bench, clamp, component, cutting list, diagram, dowel, drill bits, exploded-diagram, finish, frame, function, hand drill, jelutong, linkage, mark out, measure, mechanism, model, research, right-angle

Electrical	N/A	N/A	Designing a game that works using static electricity, including the instructions for playing the game Identifying a design criteria and a target audience	Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas	Designing an electronic greetings card with a simple electrical control circuit Creating a labelled design showing positive and negative parts in relation to the LED and the battery	Designing a steady hand game - identifying and naming the components required

systems			Making an electrostatic game, referring to the design criteria Using a wider range of materials and equipment safely Using electrostatic energy to move objects in isolation as well as in part of a system Understanding what static electricity is and how it moves objects through attraction or repulsion Generating static electricity independently • Using static electricity to make objects move in a desired way	Making a torch with a working electrical circuit and switch Using appropriate equipment to cut and attach materials Assembling a torch according to the design and success criteria Learning how electrical items work Identifying electrical products Learning what electrical conductors and insulators are Understanding that a battery contains stored electricity and can be used to power products Understanding how a torch works Articulating the positives and negatives about different torches	Making a working circuit Creating an electronics greeting card, referring to a design criteria Mapping out where different components of the circuit will go Learning the key components used to create a functioning circuit Learning that graphite is a conductor and can be used as part of a circuit Learning the difference between series and parallel circuits Understanding that breaks in a circuit will stop it from working	Drawing a design from three different perspectives Generating ideas through sketching and discussion Modelling ideas through prototypes Making electromagnetic motors and tweaking the motor to improve its function Constructing a stable base for an electromagnetic game Accurately cutting, folding and assembling a net Decorating the base of the game to a high quality finish Making and testing a circuit Incorporating a circuit into a base Understanding how electromagnetic motors work Learning that batteries contain acid, which can be dangerous if they leak Learning that when electricity enters a magnetic field it can make a motor
Vocab			Attract, component, constructive-criticism, design criteria, electrostatic, evaluation, feedback, motion, repel, target audience, test.	Battery, buzzer, cell, component, conductor, copper, design-criteria, electrical item, electricity, electronic, function, insulator, series circuit, switch, test, torch, wire.	Battery, buzzer, circuit, component, conductor, copper, design, function, graphite, invocative, insulator, LED, modify, parallel, circuit, series circuit, switch, target audience, test, wire.	Assemble, battery pack, bulb, bulb holder, buzzer, circuit, circuit symbol, component, conductor, copper, design, evaluation, function, insulator, LED, magnetic field, net, perspective drawing, plan, pliers, prototype, series circuit, side view, symmetrical, wire cutters.

Cooking and nutrition	Chopping fruit and vegetables safely. Identify food as a fruit or veg, Learning how and where fruit and veg grow. Tasting and evaluating different food combinations Describing appearance, smell and taste Suggesting information to be included on packaging Understanding the difference between fruits and vegetables Describing and grouping fruits by texture and taste	Designing a healthy wrap based on a food combination which work well together Slicing food safely using the bridge or claw grip Constructing a wrap that meets a design brief Describing the taste, texture and smell of fruit and vegetables Taste testing food combinations and final products Describing the information that should be included on a label Understanding what makes a balanced diet Knowing where to find the nutritional information on packaging Knowing the five food groups	Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination Following the instructions within a recipe Establishing and using design criteria to help test and review dishes Describing the benefits of seasonal fruits and vegetables and the impact on the environment Learning that climate affects food growth Working with cooking equipment safely and hygienically Learning that imported foods travel from far away and this can negatively impact the environment Learning that vegetables and fruit grow in certain seasons Learning that each fruit and vegetable gives us nutritional benefits Learning to use, store and clean a knife safely	Designing a biscuit within a given budget, drawing upon previous taste testing Following a baking recipe Cooking safely, following basic hygiene rules Adapting a recipe Describing the impact of the budget on the selection of ingredients Understanding the impact of the cost and importance of budgeting while planning ingredients for biscuits Understanding the environmental impact on future product and cost of production	Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients Writing an amended method for a recipe to incorporate the relevant changes to ingredients Cutting and preparing vegetables safely Using equipment safely, including knives, hot pans and hobs Knowing how to avoid crosscontamination Following a step by step method carefully to make a recipe Identifying the nutritional differences between different products and recipes Identifying and describing healthy benefits of food groups Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed Understanding what constitutes a balanced diet Learning to adapt a recipe to make it healthier Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option	Writing a recipe, explaining the key steps, method and ingredients Including facts and drawings from research undertaken Following a recipe, including using the correct quantities of each ingredient Adapting a recipe based on research Working to a given timescale Working safely and hygienically with independence Evaluating a recipe, considering: taste, smell, texture and origin of the food group Taste testing and scoring final products Suggesting and writing up points of improvements in productions Recording the relevant ingredients and equipment needed for a recipe Understanding the combinations of food that will complement one another Understanding where food comes from, describing the process of 'Farm to Fork' for a given ingredient
Vocab	Blender, carton fruit, healthy, ingredients, peel, peeler, recipe, slice, smoothie, stencil, template, vegetable.	Alternative, balanced, expensive, healthy, ingredients, packaging, refrigerator, sugar, substitute	Climate, dry climate, exported, imported, Mediterranean climate, nationally, nutrients, polar climate, recipe, seasonal food, seasons, temperate climate, tropical climate.	Adapt, budget, equipment, flavour, ingredients, method, net, packaging, porotype, quantity, recipe, target audience, unit of measurement, utilities.	Beef, cross-contamination, diet, ethical issues, farm, healthy, ingredients, method, nutrients, packaging, reared, recipe, research, substitute, supermarkets vegan, vegetarian, welfare.	Accompaniment, collaboration, cookbook, cross-contamination, equipment, farm, flavour, is lustration, ingredients, method, nationally, preparation, processed, reared, recipe, research, target-audience, unit of measurement.

Textiles	Using a template to create a design for a puppet Cutting fabric neatly with scissors Using joining methods to decorate a puppet Sequencing steps for construction Learning different ways in which to join fabrics together: pinning, stapling, gluing	Designing a pouch Selecting and cutting fabrics for sewing Decorating a pouch using fabric glue or running stitch Troubleshooting scenarios posed by teacher Evaluating the quality of the stitching on others' work Discussing as a class, the success of their stitching against the success criteria Identifying aspects of their peers' work that they particularly like and why Joining items using fabric glue or stitching Identifying benefits of these techniques Threading a needle Sewing running stitch, with evenly spaced, neat, even stitches to join fabric Neatly pinning and cutting fabric using a template	Designing and making a template from an existing cushion and applying individual design criteria Following design criteria to create a cushion Selecting and cutting fabrics with ease using fabric scissors Sewing cross stitch to join fabric Decorating fabric using appliqué Completing design ideas with stuffing and sewing the edges Threading needles with greater independence Tying knots with greater independence Sewing cross stitch and appliqué Understanding the need to count the thread on a piece of even weave fabric in each direction to create uniform size and appearance Understanding that fabrics can be layered for affect	Writing design criteria for a product, articulating decisions made Designing a personalised Book sleeve Making and testing a paper template with accuracy and in keeping with the design criteria Measuring, marking and cutting fabric using a paper template Selecting a stitch style to join fabric, working neatly sewing small neat stitches Incorporating fastening to a design Deciding how many of the criteria should be met for the product to be considered successful Threading needles with greater independence Tying knots with greater independence Sewing cross stitch and appliqué Understanding the need to count the thread on a piece of even weave fabric in each direction to create uniform size and appearance Understanding that fabrics can be layered for affect	Designing a stuffed toy considering the main component shapes required and creating an appropriate template Considering proportions of individual components Creating a 3D stuffed toy from a 2D design Measuring, marking and cutting fabric accurately and independently Creating strong and secure blanket stitches when joining fabric Using applique to attach pieces of fabric decoration Learning to sew blanket stitch to join fabric Applying blanket stitch so the space between the stitches are even and regular Threading needles independently	Designing a waistcoat in accordance to specification linked to set of design criteria to fit a specific theme Annotating design Using template pinning panels onto fabric Marking and cutting fabric accurately, in accordance with a design Sewing a strong running stitch, making small, neat stitches and following the edge Tying strong knots Decorating a waistcoat - attaching objects using thread and adding a secure fastening Learning different decorative stitches Application and outcome of the individual technique Sewing accurately with even regularity of stiches
Vocab	Decorate, design fabric, glue, model, hand puppet, safety pin, staple, stencil, template,	Accurate, fabric, knot, punch, running stitch, sew, shape, stencil, thimble	Accurate, applique, cross-stitch, cushion, decorate, detail, fabric, patch, running stitch , seam, stencil, stuffing, target audience, template.	Aesthetic, assemble, book sleeve, design criteria, fabric, fastening, mock-up, net, running stitch, stencil, target audience, target customer template.	Accurate, annotate, appendage, blanket stitch, design criteria, design evaluation, fabric, sew, shape, stuffed, stuffing, template.	Adapt, annotate, design, design criteria, details, fabric, fastening, knot, properties, running stitch, seam, sew, shape, target, audience, target customer, template, thread, unique, waistcoat, waterproof.

Evaluation	Evaluating a product according to the design criteria Suggest points for improvements. Test a finished product. Reflecting on a finished product, explaining likes and dislikes	Evaluating own work and the work of others based on the original design criteria/design. Using peer feedback to modify a final design Evaluating different designs Testing and adapting a design Evaluating an end product and thinking of other ways in which to create similar items	Evaluating products made by the class Describing what characteristics of a design and construction made it the most effective Using the views of others to improve designs Testing and modifying the outcome, suggesting improvements	Considering effective and ineffective designs Evaluating final products Testing the success of a product against the original design criteria and justifying opinions Learning to give constructive criticism on own work and the work of others Suggesting modifications	Evaluating the work of others and receiving feedback on own work Suggesting points for improvement Testing and evaluating the success of a final product and taking inspiration from the work of peers Applying points of improvements Describing changes they would make/ do if they were to do the project again Evaluating a completed product against the original design sheet and looking at modifications that could be made to improve the reliability or aesthetics of Testing and evaluating an end product and giving point for further improvements	Improving a design plan ba evaluation Testing and adapting a des it as it is developed Identifying what makes a s structure Evaluating the work of oth receiving feedback on own Evaluating health and safet production to minimise cro contamination Evaluating work continuall created
Vocab	Product, evaluate, reflect, improvement	Evaluate, product, test, adapt, changes, feedback, design criteria,	Evaluate, product, improvements, test, suggestions,	Effective, evaluate, constructive criticism, modifications,	Effective, evaluate, constructive criticism, modifications, reliability, peer work,	Effective, evaluate, constru modifications, continuoush contamination.