Design and Technology Curriculum Progression

DT Concepts

Research	Design	Make	Evaluate
			

Big Ideas

Workshop	Textiles	Food
		
Structure mechanism and electrical systems	Exploring the design opportunities provided by natural and synthetic textile materials	Healthy eating

EYFS

			
Research:	**Design:**	**Make:**	**Evaluate:**
Explore different products found in the surrounding provision	Generate and communicate ideas through discussion and simple drawings	Use resources within the provision to independently craft and refine techniques	Suggest points for self- and peer-improvements

Big Idea	Design Brief/ Context	Progression/ Key Skills	Key Vocabulary
Workshop: **Freestanding structures** 	**What shapes make the most stable structure?** *We need to build a display stand to hold a teddy or toy for our classroom. It must be strong, stable, and not fall over.*	- Understanding that cylinders are a strong type of structure that are often used for towers - Know that triangulation makes a structure more stable - Know that shapes with wider bases and buttresses are more stable	**shape** **build** **join** **stable** **wobble** **base** **strong/weak**
Textiles: **Threading and weaving** 	**Can we make patterns using string?** *Our classroom needs new decorations for the window or fence outside. Can you weave a colourful pattern to hang up and brighten the space?*	- Thread beads on a lace - Weave a lace in and out of cross stitch material/lacing cards - Cut material with scissors independently	**thread** **weave** **string** **hole** **pattern** **in and out**
Food: **Exploring a range of foods** 	**Can we describe different tastes and textures?** *We are planning a snack table for our class. Can you help choose foods with different tastes and textures so we have a good mix for everyone to try?*	- Use descriptive vocabulary to describe the taste of a range of foods e.g. sharp, sweet, creamy - Group foods by texture - Investigate pairing of two or more foods e.g. cheese and pineapple - Understand where some food comes from.	**tasty** **sweet** **sour** **crunchy** **soft** **texture**

Year 1

Big Idea	Design Brief/ Context	Progression	Key Vocabulary
Food: **The five main food groups** 	**Can snacks be healthy?** We need to plan a healthy snack for your school friends at break time. Choose foods that help everyone grow strong, have energy for playing and learning and that are tasty.	- Know what food groups make a balanced diet - Know where to find the nutritional information on packaging - To understand where food comes from/is sourced.	**healthy** **fruit and vegetables** **protein** **carbohydrates** **dairy** **balanced** **food source**
Textiles: **Basic stitching** 	**How can we join material?** A local community centre wants to provide small fabric items for children to use, but many of the pieces fall apart when handled. We need to join pieces of fabric to make a product that stays together and can be used safely.	- Learn different ways in which to join fabrics together: pinning, stapling, gluing - Sew a running stitch, with evenly spaced, neat, even stitches to join fabric (binca mesh or hessian) - Begin to thread a needle with support (plastic or blunt metal needle with large eye)	**material/fabric** **running stitch** **needle** **thread** **join** **pull**
Workshop: **Wheels and axles** 	**How do wheels underneath a car turn round?** We need to design a small toy with wheels for a younger child to play with. Your toy needs to roll smoothly and be safe for a little child to play with.	- Know that mechanisms are a collection of moving parts that work together in a machine - Explore how wheels and axles are used in the real world, e.g. turbines, conveyor belt, Ferris wheel - Know that for a wheel to rotate it must be attached to an axle	**wheel** **axle** **rotate** **chassis** **join** **fasten** **move** **push/ pull**

Year 2

Big Idea	Design Brief/ Context	Progression	Key Vocabulary
Food: **Preparing fruit and vegetables** 	**How can we prepare food safely?** Children are going on a school trip to the beach, and they need a healthy snack which is easy to transport. We need to prepare a snack using fruit and vegetables that is safe and easy to make, refreshing and nutritious.	- Understand the difference between fruits and vegetables - Learn where and how fruits and vegetables grow - **Use the claw and bridge chopping methods to prepare fruit and vegetables** Know how to prepare themselves and a workspace to cook safely in, learning the basic rules to avoid food contamination	**fruit** **vegetable** **claw grip** **bridge grip** **hygiene** **source/origin** **utensils**
Textiles: **Templates and joining** 	**Can we repurpose our old clothes?** Volunteers at the local clothing bank want to make the most of donated clothes so families in need can benefit. We need to design something useful and eye-catching from old fabric, to reduce waste and give clothes a new purpose for families.	- Begin to thread a needle (blunt metal) independently with or without the aid of a needle threader - Neatly pin and cut fabric using a template (binca mesh and possibly introducing felt). - Refine running stitch (from year 1) and introduce overstitch for decorative effect.	**template/pattern** **running stitch** **overstitch** **finish** **pinning** **design criteria**
Workshop: **Sliders and levers** 	**How can characters in story books move?** Librarians want to make storybooks more exciting for young children. We need to design a moving picture that uses sliders or levers to bring characters to life, so that younger children enjoy reading more. It needs to be easy to use, durable and ____	- Know that there is an input and output in a mechanism - Identify mechanisms in everyday objects - Understand that sliders and levers produce different types of movement: reciprocating and oscillating -	**slider** **lever** **pivot/fulcrum** **slot** **guide/bridge** **mechanism**

Year 3

Big Idea	Design Brief/ Context	Progression	Key Vocabulary
Workshop: **Pneumatics** 	**Do toys always need batteries to move?** Toy companies are looking for fun toys that don't rely on batteries. We need to design a moving toy powered by air aimed at ____ It needs to be eye-catching, easy to operate and ____	- Learn that mechanisms are a system of parts that work together to create motion - Understand that pneumatic systems can be used as part of a mechanism - Learn that pneumatic systems force air over a distance to create movement	**mechanism** **input/process/output** **pressure** **airtight seal** **pneumatic system** **tubing**
Textiles: **2D shape to 3D shape project** 	**How can we turn a 2D pattern into a 3D product?** A local gift shop wants to sell small fabric products that are both useful and appealing to tourists. We need to design and sew a 3D textile item from a 2D pattern.	- Use over stitch to join fabric (non-mesh fabric like felt or cotton) so the space between the stitches are even and regular. Refine stitches already taught. - Begin combining stitches for both function and decoration. - Design a 2D pattern piece that is in scale with the final design - Thread needles (blunt/introduce sharper needles) with greater independence (group instruction or peer support) - Tie knots with support	**pattern piece** **net** **overstitch** **backstitch** **seam** **prototype**
Food: **Healthy and varied diet** 	**Can a balanced diet be exciting?** A scientist is going on an expedition to Antarctica. We need to design and make a nutritious meal that is warm, healthy and well-balanced that will also give them energy and nutrients.	- Follow the instructions within a recipe, including weighing ingredients - Adapt a recipe - Select ingredients as healthier substitutes - Understand where some food is sourced from.	**nutritional value** **balanced diet** **adapt/substitute** **texture/appearance/flavour** **food source**

Year 4

Big Idea	Design Brief/ Context	Progression	Key Vocabulary
Workshop: **Simple circuits and switches** 	**How can we use electrical circuits in our designs?** Families who enjoy camping are looking for a product that can keep them safe at night, whilst camping outside. We need to design a product that gives them access to sound or light, without the need for a plug.	- Understand that a battery contains stored electricity and can be used to power products - Identify the features of electrical items including a torch - Incorporate an electrical system into a design to create light, sound or movement	**circuit** **battery/cell** **positive/negative terminal** **component** **complete/incomplete circuit** **output**
Textiles: **Embroidery and applique** 	**How can we make our products more aesthetically pleasing?** A homeware company wants fabrics that are more decorative to attract buyers. We need to design and decorate fabric using embroidery and appliqué to make products more appealing, offer more choice and help to sell more products.	- Sew appliqué using stitches learnt so far and using blanket stitch for edging. - Understand that fabrics can be layered for effect (woven fabrics such as felt or cotton) - Thread needles (sharper needles) with independence (group instruction or peer support) - Tie knots with greater independence	**aesthetic** **embroidery** **applique** **blanket stitch** **layering**
Food: **Food costs and budgeting** 	**Can we make a profit from our own baked goods?** School council want to raise money for the school by putting on a bake sale. We need to plan and make a baked product within a budget so that a profit can be made.	- Understand the impact of the cost and importance of budgeting while planning ingredients - Design a baked goods recipe using a given budget - Pre-bake ovens to a set temperature under adult supervision - Understand where some food is sourced from.	**budget** **cost price** **profit** **food source** **pre-heat** **recipe**

Year 5

Big Idea	Design Brief/ Context	Progression	Key Vocabulary
Workshop **More complex switches with sensors** 	**How do fire alarms keep us safe?** Local schools are updating their fire safety systems and need designs that use sensors to detect light or movement. We need to design a product with a sensor to help schools keep pupils and staff safe in an emergency.	- Learn that batteries contain acid, which can be dangerous if they leak - Identify and name the circuit components in an electronic product - Construct a product the uses motion or light sensors to perform a function	**sensor** **circuit component** **acid leakage** **process device** **output (alarm/light/buzzer)** **electrical safety**
Textiles: **CAD in textiles** 	**Can computers design clothing?** Build-a-Bear workshop is looking for accurate and creative designs for new textile products for their bears. We need to design a product using computer-aided design and stitching techniques to produce precise and attractive items that appeal to children.	- Use joining techniques appropriately - Thread needles independently (can also tie off thread) - Use computer-aided design (TinkerCAD) to develops templates that are fit for purpose - Apply running, backstitch, blanket stitch and decorative stitches (e.g. cross stitch). - Understand the need to count the thread on a piece of even-weave fabric in each direction to create uniform size and appearance	**cross stitch** **computer-aided design** **seam allowance** **pattern template** **reinforcement** **textile properties**
Food: **Dietary requirements** 	**How can we cater for a range of diets?** A local café wants to cater to more customers on their menu with meals that suit different dietary needs. We need to adapt a recipe using suitable ingredients so that it meets a variety of dietary requirements.	- Compare two adapted recipes using a nutritional calculator and then identify the healthier option - Adapt a recipe to meet a dietary requirement, e.g. use plant-based ingredients instead of meat or dairy.	**nutritional analysis** **dietary substitutes** **allergen-free** **ethical sourcing** **cultural dietary practices**

Year 6

Big Idea	Design Brief/ Context	Progression	Key Vocabulary
Workshop: **Cams** 	**How many different ways can we make toys move?** A local toy shop wants new, hand-made toys that use interesting mechanisms to attract customers aged ____. We need to design a toy using cams to give the shop a creative product that moves in exciting ways.	- Use a bench hook to saw safely and effectively - Explore cams, learning that different shaped cams produce different follower movements Explore types of motions: oscillating, reciprocating, rotary and linear	**cam mechanism** **follower** **cam profile** **oscillating motion** **reciprocating motion** **rotary motion** **linear motion**
Textiles: **Fashion designing** 	**Can we make an aesthetically pleasing piece of clothing?** A male fashion retailer wants clothing that is both stylish and durable for everyday wear. We need to design and make a piece of clothing using strong stitching and CAD templates to create clothing that is attractive and long-lasting. **Denim**	- Confidently use a range of stitches for a range of purpose (functional and decorative) (see all progression) - Know that fabrics (a wide range including upcycled fabrics) can be strengthened, stiffened and reinforced where appropriate. - Use computer-aided design for templates and logos - Independently thread sharper needles with smaller eyes	**aesthetic** **chain stitch** **reinforcement/stiffening/ strengthening** **pattern template** **computer-aided design** **seam allowance**
Food: **Celebrating culture and seasonality** 	**Why is sourcing local food better for the planet?** A local community centre runs events to celebrate different cultures and promote sustainable eating. They want dishes that use seasonal, locally sourced ingredients. We need to design a dish using seasonal, local ingredients that reflects cultural flavours. (research could include researching cultures in the local area)	- Understand where food comes from, describing the process of 'Farm to Fork' for a given ingredient - Learn that imported foods travel from far away and this can negatively impact the environment - Learn that vegetables and fruit grow in certain seasons - Learn that climate affects food growth	**farm to fork** **local produce/locally sourced** **imported foods** **seasonality** **carbon footprint** **climate influence** **cultural cuisine**