

Design Technology- Technical Knowledge

Progression

Reception:

- Using tools to make moving parts. Including split pins and hole punches.
- Stitching using large plastic needles.
- Learn about how everyday objects work by dismantling things.
- Opportunities to discuss reasons that make activities safe or unsafe, for example hygiene, electrical awareness, and appropriate use of senses when tasting different flavourings.
- Observing closely and replicating a structure.

Year 1:

- Know simple characteristics of materials and components.
- Know and investigate the simple movements and mechanisms of simple levers and sliders.
- Make simple levers and sliders.
- Know how freestanding structures can be made stronger, stiffer and more stable.
- Investigate stable structures.
- Investigate joining using tape, PVA glue and glue sticks.
- Know the correct technical vocabulary for the projects they are undertaking:

slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards, design, make, evaluate, user, purpose, ideas, design criteria, product, function.

Cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder.

fruit and vegetable names, names of equipment and utensils, soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular.

Year 2:

Recap - Know simple characteristics of materials and components.

Investigate joining using tape, PVA glue and glue sticks.

- Know and investigate the movements of simple mechanism: wheels and axles.
- Use wheels and axles.

- Know that a 3D textiles product can be assembled from two identical fabric shapes.
- Investigate simple stitching using needles and felt (running stitch)
- Investigate joining using treasury tags, split pins and blue tack.
- Know the correct technical vocabulary for the projects they are undertaking:

vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment and materials used, design, make, evaluate, purpose, user, criteria, functional.

fruit and vegetable names, names of equipment and utensils, soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular,

Names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish.

Year 3:

Recap -

Know that a 3D textiles product can be assembled from two identical fabric shapes.

Investigate simple stitching using needles and felt (running stitch)

- Know how to use mathematics to help design and make products work.
- Know that materials have aesthetic qualities.
- Know that a single fabric shape can be used to make a 3D textiles product.
- Know that food ingredients can be fresh, pre-cooked and processed.
- Investigate packaging and finding ways to strengthen it.
- Know the correct technical vocabulary for the projects they are undertaking:

Shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype.

Name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations.

Fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces.

Year 4:

Recap - Know how to use mathematics to help design and make products work.

Know that materials have aesthetic properties.

Know that food ingredients can be fresh, pre-cooked and processed.

- Know how to use science to help design and make products.
- Know that materials have functional qualities.
- Know how mechanical systems such as levers and linkages create movement.
- Know how simple electrical circuits and components can be used to create functional products.
- Know that mechanical and electrical systems have an input, process and output.
- Know how to program a computer to control their product.
- Know the correct technical vocabulary for the projects they are undertaking:

Mechanism, lever, linkage, pivot, slot, bridge, guide, system, input, process, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief.

Series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device.

Name of products, names of equipment, utensils, techniques and ingredients, texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet, planning, design criteria, purpose, user, annotated sketch, sensory evaluations.

Year 5:

Recap - Know how to use mathematics to help design and make products work.

Know that materials have aesthetic properties.

Know that food ingredients can be fresh, pre-cooked and processed.

Know how to use science to help design and make products.

Know that materials have functional qualities.

Know how mechanical systems such as levers and linkages create movement.

Know how simple electrical circuits and components can be used to create functional products.

- Know that materials can be combined and mixed to create more useful characteristics.
- Know how to reinforce and strengthen a 3D framework.
- Know how more complex electrical circuits and components can be used to create functional products.

- Know that a recipe can be adapted by adding or substituting one or more ingredients.
- Know the correct technical vocabulary for the projects they are undertaking:

Frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional.

Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, design specification, innovative, research, evaluate, design brief.

Series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart, function.

Year 6:

Recap - Know how to use mathematics to help design and make products work.

Know that materials have aesthetic properties.

Know that food ingredients can be fresh, pre-cooked and processed.

Know how to use science to help design and make products.

Know that materials have functional qualities.

Know how mechanical systems such as levers and linkages create movement.

Know that a recipe can be adapted by adding or substituting one or more ingredients.

- Know how mechanical systems such as pulleys and gears create movement.
- Know how to program a computer to monitor changes in the environment and control their products.
- Know that 3D textiles products can be made through a combination of fabric shapes.
- Know the correct technical vocabulary for the projects they are undertaking:

Seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper, design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype.

Pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output, design specification, design brief.

Ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, design specification, innovative, research, evaluate.

