John Bunyan Primary School & Nursery
DESIGN AND TECHNOLOGY

A Progression of Skills - Year 1

Food: Bring on breakfast!	Investigative and Evaluative Activities	1. Name different foods and drinks consumed for a specific meal. 2. State what makes a healthy product (i.e. food, drink and inclusion of a 5 A DAY item). 3. Express an opinion about ingredients tasted using sensory vocabulary.
	Focused Tasks	4. Carry out the Getting Ready to Cook steps, with support (tie back long hair, remove jewelry, roll up long sleeves, put on an apron, wash and dry hands) 5. Perform simple food preparation skills to make a product safely and hygienically (e.g. fork secure, bridge hold, peel, mash, juice, cut, spoon, arrange).
	Design, Make and Evaluate	6. Design a simple dish based on simple criteria for a user and purpose. 7. Evaluate the appearance and taste of their product. 8. Suggest ways their dish could be modified in the future.
Textiles: Templates & joining techniques	Investigative and Evaluative Activities	1. Investigate and evaluate existing products linked to the chosen project. 2. Make drawings of existing products, stating the user and purpose. 3. Identify and label, if appropriate, the fabrics, fastenings and techniques used.
	Focused Tasks	4. Investigate different fabrics to determine which is best for the purpose of the product. 5. Use a template or simple paper pattern (using prepared teacher aid or children's own) 6. Use appropriate tools to mark out, tape or pin the fabric to the templates. 7. Cut out fabric pieces for the product. 8. Use joining techniques e.g. running stitch including threading own needle, stapling, tying and gluing. 9. Talk about the advantages and disadvantages of each joining technique. 10. Use finishing techniques e.g. sewing buttons, 3-D fabric paint, gluing sequins, printing.
	Design, Make and Evaluate	11. Identify the purpose and user of the product. 12. Create design criteria with the teacher 13. Generate a range of ideas. 14. Use talk, drawings and mock-ups to develop and communicate ideas. 15. Evaluate ongoing work and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.
Structures: Freestanding structures	Investigative and Evaluative Activities	1. Use the local environment to explore structures 2. Draw or photograph existing structures and label with the correct technical vocabulary e.g. wall, tower, framework, base, joint, metal, wood, plastic, brick, triangle, square, rectangle, cuboid, cube.
	Focused Tasks	3. Demonstrate measuring, marking out, cutting, shaping, joining and finishing techniques with a range of tools using new/reclaimed materials 4. Discuss the suitability of materials for their products according to their characteristics. 5. Build and explore a variety of freestanding structures using construction kits, such as wooden blocks, interconnecting plastic bricks etc 6. Fold paper or card in different ways to make freestanding structures, using masking tape where necessary to make joins.
	Design, Make and Evaluate	7. Identify the purpose and user of the product. 8. Create design criteria with the teacher 9. Generate a range of ideas. 10. Use talk, drawings and mock-ups to develop and communicate ideas with construction kits and other materials. 11. With the teacher, plan the order in which the structure will be made. 12. Evaluate ideas and final products against original design criteria.

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A Progression of Skills - Year 2

Food: Prepare to party!	Investigative and Evaluative Activities	1. Give examples of food eaten for a specific occasion. 2. Recognise *The eatwell plate* and know that it shows us how to eat healthily. 3. Sort ingredients from a dish into the five food groups and comment on its contribution to healthy eating. 4. Taste ingredients and discuss their suitability for a dish using sensory vocabulary. 5. Explain some of the reasons people may not consume certain food or drinks. 6. Suggest ways to adapt a dish to make it suitable for the needs of others (e.g. allergies, religion, culture, choice).
	Focused Tasks	7. Recall and explain the 'getting ready to cook' steps. 8. Perform basic cooking skills as instructed *(e.g. cutting out, snipping, mixing, spooning, spreading).* 9. Demonstrate the safe use of some basic cooking equipment (e.g. cutters, kitchen scissors).
	Design, Make and Evaluate	10. Get ready to cook, with some support *(e.g. tying of apron).* 11. Plan a dish with consideration for the needs of others (e.g. a vegetarian). 12. Make a simple dish, safely and hygienically.
Mechanisms: Wheels and Axles	Investigative and Evaluative Activities	1. Explore and evaluate a range of wheeled products such as toys and everyday objects. 2. Draw an example of a wheeled product, stating the user and purpose, and labelling the main parts e.g. body, chassis, wheels, axles and axle holders. 3. Identify how wheels and axles are used in daily life. 4. Use books to introduce relevant vocabulary and to emphasise user and purpose.
	Focused Tasks	5. Use construction kits with wheels and axles to make a product that moves. 6. Mark out, hold, cut and join materials and components correctly. 7. Assemble some examples of wheel, axle, axle holder combinations.
	Design, Make and Evaluate	8. Identify a user and purpose for the product and generate simple criteria with support. 9. Generate, develop and communicate ideas e.g. through talk and drawing. 10. Make a wheel and axle product using design ideas and criteria. 11. Add finishing techniques to the product using information and communication technology such as clip art, word processing, paint or simple drawing programs. 12. Evaluate the finished product, communicating how it works and how it matches the design criteria, including any changes they made.
Mechanisms: Sliders and Levers	Investigative and Evaluative Activities	1. Explore and evaluate a collection of books and everyday products that have moving parts, including those with levers and sliders
	Focused Tasks	2. Develop knowledge and skills by replicating the slider and lever teaching aids. 3. Add pictures to their mechanisms.
	Design, Make and Evaluate	4. Identify user, purpose and how the product will move ie lever or slider. 5. Generate simple design criteria with the teacher 6. Develop ideas through talking, drawing and making mock-ups of ideas with paper and card. 7. Discuss the intended finishing techniques e.g. using digital text and graphics, paint, felt tipped pens or collage. 8. Talk about the order in which the mechanisms will be made. 9. Evaluate developing ideas and final products against the original design criteria.

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A Progression of Skills - Year 3

Food: Be a Baker!	Investigative and Evaluative Activities	1. Describe a selection of breads tasted using sensory vocabulary 2. Recall and apply the 'get ready to cook' steps. 3. Research how bread is made and where bread ingredients come from.
	Focused Tasks	4. Make a bread roll by applying skills which have been demonstrated (e.g. knead, shape). 5. Select and use basic equipment to prepare ingredients safely.
	Design, Make and Evaluate	6. Suggest ideas for basic design criteria. 7. Design bread based on their research and experiences which meets their design criteria 8. Follow their design and apply the food preparation skills they have learned to make their bread. 9. Evaluate their bread against the design criteria and suggest improvements.
Textiles: 2-D Shape to 3-D Product	Investigative and Evaluative Activities	1. Investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes, linked to the product they will design, make and evaluate. 2. Think about products from the past and what changes have been made in textile production and products e.g. the invention of zips and Velcro. 3. Disassemble appropriate textiles products to gain an understanding of 3-D shape, patterns and seam allowances.
	Focused Tasks	1. Practise sewing two small pieces of fabric together, demonstrating the use of, and need for, seam allowances. 2. Create a paper pattern using 2-D shapes. 3. Consider whether fabrics are suitable for the chosen purpose and user. 4. Test out a range of decorative finishing techniques e.g. appliqué, embroidery, fabric pens/paints, printing.
	Design, Make and Evaluate	1. Create a design brief, supported by the teacher, which is authentic and meaningful. 2. Discuss the intended user, purpose and appeal of their product. 3. Sketch and annotate a range of possible ideas, constantly encouraging creative thinking. 4. Produce mock-ups and prototypes of the chosen product. 5. Plan the main stages of making e.g. using a flowchart or storyboard. 6. Evaluate as the process is undertaken and the final product in relation to the design brief and criteria.
Structures: Shell Structures	Investigative and Evaluative Activities	1. Investigate a collection of different shell structures including packaging. 2. Take a small package apart identifying and discussing parts of a net including the tabs. 3. Evaluate existing products to determine their effectiveness. 4. Evaluate graphics eg colours/impact of style/logo/size of font.
	Focused Tasks	5. Using a simple drawing software such as Techsoft 2D Primary or Microsoft Word explore the interface and drawing tools to practise drawing and manipulating shapes such as squares. 6. Use software to open existing drawings including nets and to draw nets of their own. 7. Explore different fill and font tools available. 8. Practise making nets out of card to create 3-Dshapes. 9. Experiment with assembling pre-drawn nets in numerous ways using scoring, cutting and assembling techniques. 10. Construct a simple box and show how a window can be cut out and acetate sheet added
OR	Design, Make and Evaluate	11. Develop a design brief which is authentic and meaningful. 12. Identify the uses and purposes of their shell structure 13. Develop a design using computer-aided design (CAD) software to create nets. 14. Print out a net to develop prototypes in order to evaluate and refine ideas. 15. Identify the main stages of making and the appropriate tools and skills needed for the project. 16. Evaluate throughout and the final products against the intended purpose and with the intended user.
Mechanical Systems: Pneumatics	Investigative and Evaluative Activities	1. Investigate, analyse and evaluate familiar objects that use air to make them work e.g. bicycle pump, balloon, inflatable swimming aids, foot pump for inflating an air bed.

	Focused Tasks	2. Demonstrate how to assemble the systems using syringes, tubing, balloons and plastic bottles. 3. Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques. 4. Try out, draw & answer questions about three systems: a) Balloon connected to a washing-up liquid bottle. b) Two syringes of the same size connected together. c) Two syringes of different sizes connected together.
	Design, Make and Evaluate	5. With support, develop a design brief which is authentic and meaningful. 6. Discuss the purpose of the products they will be designing and making and who the products will be for. 7. Generate a range of ideas 8. Using annotated sketches and prototypes, develop, model and communicate ideas. 9. Evaluate the final products against the intended purpose and with the intended user,

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A Progression of Skills - Year 4

Food: Lovely lunch	Investigative and Evaluative Activities	1. Identify and classify ingredients in composite dishes (e.g. sandwiches) according to The eatwell plate food groups. 2. Name and explain some of the reasons that can affect food choice. 3. Explain what a healthy lunch should include by referring to inclusion of foods from the four main (largest) food groups. 4. Give examples of ways to make a sandwich healthier.
	Focused Task	5. Prepare a topped savoury cracker safely and hygienically using spreading, slicing and arranging skills. 6. Describe how their topped savoury cracker tastes using sensory vocabulary.
	Design, Make and Evaluate	7. Develop their own design criteria with guidance. 8. Design a sandwich based on their research and design criteria. 9. Perform food preparation skills safely and hygienically to make their sandwich. 10. Evaluate their sandwich and suggest ways it could be improved
Mechanical Systems: Levers and Linkages	Investigative and Evaluative Activities	1. Investigate, analyse and evaluate books and, where available, other products which have a range of lever and linkage mechanisms.
	Focused Tasks	2. Explore a range of lever and linkage mechanisms using prepared teaching aids. 3. Develop knowledge and skills by replicating one or more of the teaching aids. 4. Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques.
	Design, Make and Evaluate	5. With support, develop a design brief which is authentic and meaningful. 6. Identify the purpose of their products and who the product will be for. 7. Generate a range of ideas. 8. Using annotated sketches and prototypes, develop, model and communicate their ideas. 9. Evaluate the final products against the intended purpose and with the intended user
Electrical Systems: Simple circuits and switches	Investigative and Evaluative Activities	1. Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered products, including those which are commercially available 2. Investigate examples of switches, including those which are commercially available, which work in different ways e.g. push-to-make, push-to-break, toggle switch. 3. Know about the dangers of mains electricity.
	Focused Tasks	4. Recap how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers. 5. Find a fault in a simple circuit and correct it 6. Use a simple computer control program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers. 7. Make a variety of switches by using simple classroom materials e.g. card. 8. Test their switches in a simple series circuit.
	Design, Make and Evaluate	9. With support, develop a design brief with the children within a context which is authentic and meaningful. 10. Identify the purpose of the battery-powered products that they will be designing. 11. Generate a range of ideas. 12. Agree on design criteria that can be used to guide the development and evaluation of the products, including safety features. 13. Use annotated sketches, cross-sectional and exploded diagrams, to develop, model and communicate ideas. 14. Consider the main stages in making and testing before assembling high quality products. 15. Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.

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A Progression of Skills - Year 5

Food: Serve a salad	Investigative and Evaluative Activities	1. Identify salad ingredients and sort them into the correct eatwell plate food groups. 2. Use the internet to research a selection of different salads. 3. Demonstrate the get ready to cook steps. 4. Create a questionnaire to research the requirements and preferences of their salad recipient.
	Focused Tasks	5. Prepare ingredients for a salad bar by safely using the bridge hold, claw grip and grating techniques. 6. Select the correct equipment for different food preparation tasks.
	Design, Make and Evaluate	7. Identify design criteria for a salad based around the requirements of an individual and purpose. 8. Communicate their salad design through notes and sketches. 9. Make the salad they have planned safely and hygienically. 10. Evaluate their salad against the design criteria and feedback from others.
Structures: Frame Structures	Investigative and Evaluative Activities	1. Investigate and make annotated drawings of a range of portable and permanent frame structures, e.g. tents, bus shelters, umbrellas. 2. Use photographs and web-based research. 3. Research key events and individuals related to their study of frame structures e.g. Stephen Sauvestre – a designer of the Eiffel Tower.
	Focused Tasks	4. Use a construction kit consisting of plastic strips and paper fasteners to build 2-D frameworks. 5. Compare the strength of square frameworks with triangular frameworks. 6. Use paper tubes and masking tape or paper straws with pipe cleaners to build 3-D frameworks such as cubes, cuboids and pyramids. 7. Demonstrate the accurate use of tools and equipment. 8. Develop skills and techniques using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. 9. Demonstrate skills and techniques for accurately joining framework materials together e.g. paper straws, square sectioned wood.
	Design, Make and Evaluate	10. Generate innovative ideas, drawing on research. 11. Produce a detailed, step-by-step plan, listing tools and materials. 12. Model ideas first using materials such as paper, card and paper straws. 13. Evaluate work and completed product, drawing on design specification, and thinking about the intended purpose and user.
Mechanical Systems: Pulleys or Gears	Investigative and Evaluative Activities	1. Investigate, analyse and evaluate existing everyday products and existing or pre-made toys that incorporate gear or pulley systems. 2. Use observational drawings and questions to develop understanding of each product.
	Focused Tasks	3. Using a construction kit, investigate combinations of two different sized pulleys to learn about direction and speed of rotation or explore combinations of two different size gears meshed together. 4. Build a working circuit that incorporates a battery, a motor and a handmade switch, such as a reversing switch. 5. Demonstrate the accurate use of tools and equipment including cutting and stripping wire, and making secure electrical connections. 6. Know about the dangers of mains electricity. 7. Draw a pictorial representation of the circuit or draw a circuit diagram using correct symbols. 8. Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate.
	Design, Make and Evaluate	9. Develop an authentic and meaningful design brief with support. 10. Generate innovative ideas by carrying out research including surveys, interviews and questionnaires and develop a design specification for a product 11. Communicate ideas through detailed, annotated drawings from different views and/or exploded diagrams. 12. Produce detailed step-by-step plans and lists of tools, equipment and materials needed. 13. Use a range of decorative finishing techniques to ensure a well finished final product that matches the intended user and purpose. 14. Evaluate throughout and the final product in use, comparing it to the original design specification.

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A Progression of Skills - Year 6

Food: Grab and Go!	Investigative and Evaluative Activities	1. Analyse a selection of products and express their opinions about ingredients using sensory vocabulary. 2. Explain the role of the getting ready to cook steps in ensuring food is hygienically prepared and safe to eat. 3. Research different *on the go* products and how they are made. 4. Carry out a survey to seek opinion about fillings and casing used in *on the go* products.
	Focused Tasks	5. Perform food skills safely and as instructed (*e.g. peel, grate, cut using the bridge hold and fork secure/claw grip*).
	Design, Make and Evaluate	6. Write a set of design criteria for an *on the go* product. 7. Design an *on the go* product based on the design criteria. 8. Write a recipe to make an *on the go* product. 9. Make their *on the go* product according to the plan. 10. Perform food skills safely and as instructed (*e.g. peel, grate, cut using the bridge hold and fork secure/claw grip*). 11. Evaluate their *on the go* product against the design criteria and feedback from others. 12. Design a suitable package for the product which includes key label information *(e.g. ingredients, weight, cost).*
Textiles: Combining Different Fabric Shapes (including computer-aided design)	Investigative and Evaluative Activities	1. Investigate and evaluate a range of existing textiles products and how they have been constructed using disassembly. 2. Investigate work by designers and their impact on fabrics and products. 3. Investigate properties of textiles e.g. exploring insulating properties, water resistance, wear and strength of textiles.
	Focused Tasks	4. Develop computer-aided design (CAD) skills by using pattern making software to generate, modify, scale, save and print pattern pieces. 5. Recognise that designs can be easily modified and repeated on the computer without the need for a physical product. 6. Investigate using art packages on the computer to design prints that can be applied to textiles using iron transfer paper. 7. Develop skills of 2-D paper pattern making using CAD and create a 3-D paper or Dipryl mock-up of a chosen product. 8. Develop skills of threading needles and joining textiles using a range of stitches, 9. Develop skills of sewing textiles by joining right side together and making seams. 10. Investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening. 11. Learn how to start and finish off a row of stitches.
	Design, Make and Evaluate	12. Generate ideas by carrying out research using surveys, interviews, questionnaires and the internet. 13. Develop a design specification for their product. 14. Communicate ideas through detailed, annotated drawings from different perspectives. 15. Produce step-by-step plans, lists of tools equipment, fabrics and components needed. 16. Develop designs using CAD software to produce pattern pieces and art programmes to produce decoration and design prints that can be applied to textiles. 17. Incorporate simple computer-aided manufacture (CAM) if appropriate e.g. printing on fabric. 18. Use a range of techniques to ensure a well-finished final product that matches the intended user and purpose. 19. Evaluate work and the final product in use, comparing the final product to the original design specification. 20. Communicate the evaluation in various forms e.g. writing for a particular purpose, giving a well-structured oral evaluation, speaking clearly and fluently.
Electrical Systems More complex switches and circuits	Investigative and Evaluative Activities	1. Research a range of relevant products that respond to changes in the environment using a computer control program such as automatic nightlights, alarm systems, security lighting 2. Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches. 3. Use each component to control a bulb in a simple circuit. 4. Know about the dangers of mains electricity.
	Focused Tasks	5. Recap measuring, marking out, cutting and joining skills with construction materials that children will need to create their electrical products. 6. Practise methods for making secure electrical connections e.g. using automatic wire strippers, twist and tape electrical connections, screw connections and connecting blocks. 7. Explore a range of electrical systems that could be used to control their products.

		8. Drawing on related computing activities, ensure that children can write computer control programs that include inputs, outputs and decision making. 9. Test out the programs using electrical components connected to interface boxes or standalone boxes.
	Design, Make and Evaluate	10. With support, develop an authentic and meaningful design brief. 11. Generate innovative ideas by drawing on research and develop a design specification for their product, carefully considering the purpose and needs of the intended user. 12. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. 13. Produce detailed step-by-step plans and lists of tools, equipment and materials needed. 14. Create and modify a computer control program to enable the product to work automatically in response to changes in the environment. 15. Critically evaluate throughout and the final product, comparing it to the original design specification. 16. Test the system to demonstrate its effectiveness for the intended user and purpose.