



St. John's Primary DT Progression of Knowledge and Skills

STRUCTURES	EYFS Junk modelling Boats	Year 1 Stable Structures	Year 2 A Chair for a Bear	Year 3 Product Packaging
Design	Make verbal plans and material choices. Develop a junk model. Design a junk model boat. Use knowledge from exploration to inform design.	Understand that designs solve needs. Identify user and purpose. Discuss ideas with user in mind. Refer to existing products. Communicate ideas through simple drawings.	Use a simple design brief to create simple design criteria. Create ideas with design criteria in mind. Refer to specific parts of existing products when generating ideas. Know that a design brief helps to decide what to make.	Create simple design criteria covering functionality and appeal to a target audience. Begin to use 2D CAD software to communicate ideas.
Make	Improve fine motor/scissor skills with a variety of materials. Join materials in a variety of ways (temporary and permanent). Join different materials together. Describe their junk model and how they intend to put it together. Make a boat that floats and is waterproof, considering material choices.	Choose simple materials. Request appropriate tools. Use spacing tools (e.g., lolly stick). Cut straight/even lines. Begin cutting shapes and thicker card.	Choose from a wider range of materials and explain choices based on their properties. Look for ways to make cutting easier (e.g. turning the material). Choose known geometric shapes when making. Begin to shape objects to improve how they work. Build a strong and stiff structure by folding paper.	Create accurate shapes from templates. Cut out more complex shapes accurately. Choose shapes to suit the function of a product. Construct a range of 3D shapes.
Evaluate	Give a verbal evaluation of own and others' junk models with adult support. Check if the model matches the plan. Consider what they would do differently. Describe favourite and least favourite parts. Predict and test which materials are waterproof and which boats float best. Investigate how the shape and structure of a boat affect the way it moves.	Comment on likes/dislikes. Compare products for purpose. Comment on peers' designs. Accept feedback.	Discuss likes/dislikes of a range of existing products. Compare products and explain why some better meet the design criteria. Evaluate ideas and creations against simple design criteria. Compare the stability of different shapes. Identify the weakest part of a structure.	Investigate and analyse existing products by their functionality and appeal. Explain why aspects of a peer's design are effective or suggest specific improvements. Reflect on feedback to decide if and how to use it in future iterations.
Technical knowledge	A range of different materials can be used to make a model and they are all slightly different. Make simple suggestions to fix a junk model. Waterproof materials do not absorb water. Some objects float and others	Describing structures as buildings or freestanding structures. Making stable structures from card. Structures are made from parts. Stable structures do not topple. Wide bases increase stability. Adding weight increases	Different structures are used for different purposes. Create supporting structures to aid stability. Cylinders create stable structures. Folding strengthens or stiffens. Shape affects strength. Materials can be	Begin to understand how different structures are built. Strengthen structures by ribbing. A shell structure is a hollow shape with a thin outer layer. 3D shapes can form structures. Structures can be strengthened by

	sink. Know the different parts of a boat.	stability. Cylinders and stable shapes support structures.	manipulated to improve strength and stiffness. Definitions: strong, stiff. Material properties: hard, soft, flexible, waterproof, strong. Names of geometric shapes.	manipulating materials and shapes. Accurate shapes improve appearance and sometimes function. Good suggestions give better feedback; feedback can be used or not.
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MECHANISMS	Year 1	Year 2	Year 4	Year 5
	Wheels and Axles	Moving Monsters (Levers)	Mechanical Cars	Gears and Pulleys
Design	Design a vehicle with wheels, axles and axle holders. Create labelled drawings that illustrate movement.	Create a class design criteria for a moving monster. Design a moving monster for a specific audience in accordance with the criteria. Refer to existing products when generating ideas. Use labels to explain parts of a design. Integrate moving parts when creating mock-ups.	Take part in structured brainstorming. Develop clear, simple sketches. Use a range of diagram types (cross-sectional, thumbnail, exploded) and prototypes to communicate ideas. Create prototypes using materials with similar properties to the final design. Create design criteria for a target audience. Add detail and justify materials, tools and methods.	Identify wider problems/needs through market research. Write complex problem statements with constraints. Create detailed design criteria (user needs, environment, cost). Use cross-sections, exploded diagrams, pattern pieces. Use prototypes to refine ideas.
Make	Adapt mechanisms when they don't work. Adjust axles/wheels to improve movement	Make linkages using card for levers and split pins for pivots. Experiment with linkages, adjusting the widths, lengths and thicknesses of card. Cut and assemble components neatly. Choose between equipment used for the same purpose (e.g. joining) and explain why. Follow and recall simple safety instructions.	Follow detailed safety instructions. Use a ruler to measure accurately in millimetres. Handle different scissors with confidence. Use a hot glue gun, with close supervision, to join wooden materials (e.g. lolly sticks). Select equipment for each stage of the plan and explain why. Select materials from a wider choice within a limited design space.	Apply safety instructions consistently. Cut patterns accurately. Use hot glue guns safely in groups and know that hot glue is useful for joining materials that need a strong bond that sets quickly.. Choose adhesives based on strength/safety. Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects
Evaluate	Test wheel/axle mechanisms. Identify what stops wheels turning and recognise that a wheel needs an axle in order to move.	Evaluate own designs against design criteria. Use peer feedback to modify a final design. Discuss whether tools and techniques were used effectively. Compare products and explain why some better meet the design criteria.	Investigate and analyse existing products for functionality and appeal. Analyse why products and designers are successful. Evaluate designs against criteria and peer feedback. Evaluate how effective chosen materials and tools were. Reflect on feedback to improve future iterations.	Reflect on usability, aesthetics, innovation, sustainability. Assess designs against complex criteria. Suggest alternative materials/tools. Incorporate feedback and explain changes.
Technical knowledge	Wheels must be round to rotate smoothly. Wheels move because they are attached to a rotating axle. Axles sit inside axle holders fixed to the chassis. A balanced chassis helps wheels turn effectively. To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.	Explore everyday objects that use levers (e.g. scissors, tongs, door handle, stapler). Mechanisms are moving parts that work together to produce movement. Every mechanism has an input and an output. A lever turns on a pivot. A pivot is the part a lever moves around. A linkage	A mechanical system makes it easier to move something. Mechanical systems have more than one mechanism. Mechanical systems are often hidden to make products more appealing. A prototype is a detailed model that shows how a product will work. An exploded diagram shows how parts fit together. A hot glue gun	Gears transfer movement and force between parts. Gear teeth interlock to prevent slipping. Changing gear size changes speed and force. Pulleys move or lift loads using rope and wheels. Sustainability means thinking about the materials that were used to make a product and how the product was made.

		mechanism is made up of a series of levers.	can join materials. Different tools have different dangers.	
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ELECTRICAL SYSTEMS	Year 4	Year 5
	Torches	Wobble Bots
Design	Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.	Create more complex design criteria (user needs, environmental impact, materials, cost). Develop more independence in generating ideas. Think critically about ideas' practicality and originality. Use a series of prototypes to refine designs.
Make	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.	Produce lists of equipment, materials and tools. Create a step-by-step plan for making. Select materials based on research or user needs and explain choices. Consistently apply safety instructions and explain their importance. Balance aesthetics and functionality. Consider when best to apply finishing effects.
Evaluate	Evaluating electrical products. Testing and evaluating the success of a final product.	Reflect on usability, aesthetics, innovation and sustainability. Assess designs against complex criteria including user experience and cost. Consider alternative materials, tools or techniques. Give helpful, specific and encouraging feedback. Incorporate feedback and explain the changes made and their impact.
Technical knowledge	Understand that electrical conductors are materials which electricity can pass through. Understand that electrical insulators are materials which electricity cannot pass through. Know that a battery contains stored electricity that can be used to power products. Know that an electrical circuit must be complete for electricity to flow. Know that a switch can be used to complete and break an electrical circuit. To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. Know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	Electricity flows around a circuit. Different components produce different results in electrical systems. Create working circuits with a wider variety of components. Deconstruct electrical systems to understand how they work. An electric motor converts electricity into rotational movement. A motorised product uses a motor to function. Names of components in an electrical system.

TEXTILES	EYFS	Year 1	Year 6
	Bookmarks	Simple Stitches	Waistcoats
Design	Discuss what a good design needs. Design a simple pattern with paper. Design a bookmark. Choose from available materials.	State purpose. Talk about ideas with user in mind. Use basic drawings. Know drawings explain ideas. Know material choices affect function/appearance.	Design waistcoat to a specification. Annotate designs. Know templates help accurate marking. Consider client/target customer.
Make	Develop fine motor/cutting skills with scissors. Explore threading and weaving (under, over technique) with a variety of materials. Use a prepared needle and wool to practise threading.	Choose between a small number of materials. Explaining their choices based on personal experiences. Follow safety instructions. Use a straightedge to draw a straight line. Begin to use spacing tools to create even spacing of markings or cuts. (e.g. a lolly stick). Use large needle to sew running stitch. Add texture.	Use templates accurately. Pin fabric effectively. Mark and cut fabric accurately. Sew strong running stitch. Tie strong knots. Attach appliqué. Add secure fastening (buttons). Learn decorative stitches. Sew evenly spaced stitches. Understand the importance of consistently sized stitches.
Evaluate	Reflect on a finished product and compare it to their design.	Say what they like. Accept feedback. Know products can be improved. Know their ideas can make someone else's work better. Know other people's ideas can help make their work better.	Reflect on their work continually throughout the design, make and evaluate process.
Technical knowledge	A design is a way of planning an idea before starting. Threading is putting one material through an object.	Basic fabric properties (texture, thickness. Thread large needles. Sew a running stitch in large-weave embroidery fabric or hessian. Create patterns and following them with stitching. Know that spacing cuts or marks evenly can be useful. Know that texture is how something feels. Know evenly spaced stitches help when following a pattern.	Templates/pattern pieces ensure accurate garment shaping. Pins hold fabric securely without creasing. Strong running stitches and knots ensure durability. Appliqué can be used structurally or decoratively. Buttons and fastenings must be positioned accurately for function. Even stitch length improves strength and appearance.

COOKING AND NUTRITION	Year 2	Year 3	Year 4	Year 5	Year 6
	Balanced Diet	Eating Seasonally	Adapting a Recipe	Developing a Recipe	Come Dine With Me
Design and plan	Design three wrap ideas.	Describe how climate affects where foods grow.	Design a biscuit within a given budget. Conduct market research.	Research existing recipes. Suggest alternative ingredients. Design a jar label, thinking about information customers need.	Write a recipe, explaining the key steps, method and ingredients. Include facts and drawings from research undertaken.
Make	Chop foods safely to make a wrap. Construct a wrap that meets a design brief. Grate foods to make a wrap. Snip smaller foods instead of cutting. Spread soft foods to make a wrap. Identify the five food groups. Learn about a balanced diet.	Identify seasonal ingredients from the UK. Follow the instructions within a recipe. Taste seasonal ingredients. Peel foods by hand or with a peeler. Cut ingredients safely. Choose ingredients based on a design brief.	Follow a baking recipe. Understand safety and hygiene rules. Adapt a recipe.	Write an alternative recipe. Understand cross-contamination. Use preparation skills. Make a developed recipe.	Follow a recipe, including using the correct quantities of each ingredient. Adapt a recipe based on research. Work to a given timescale. Work safely and hygienically with independence.
Evaluate	Describe appearance, smell and taste. Taste and evaluate different food combinations. Know how to review and give a score to evaluate. Describe the information that should be included on a label.	Describe the texture and flavour of ingredients. Describe the benefits of seasonal fruits and vegetables and the impact on the environment.	Evaluate an adapted recipe. Evaluate and compare a range of products. Suggest modifications.	Explain the farm to fork process. Analyse nutritional content.	Evaluate a recipe, considering: taste, smell, texture and origin of the food group. Taste testing and scoring final products. Suggest and write up points of improvements. Evaluate health and safety in production to minimise cross contamination.
Knowledge	Know that ‘diet’ means the food and drink that a person or animal usually eats. Know what makes a balanced diet. Know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. Know that I should eat a range of different foods from each food group, and roughly how much of each food group.	Know that seasonal means foods that grow in a given season in a given country. Know some seasonal foods that grow in the UK and what season they grow in. Know that eating seasonal foods can have a positive impact on the environment. Know how to describe the flavour and texture of foods. Know how to cut and peel safely. Know that the appearance of food	Know that the amount of an ingredient in a recipe is known as the ‘quantity.’ Know that safety and hygiene are important when cooking. Know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping. Know the importance of budgeting while planning ingredients for a recipe. Know that	Know that beef comes from cows reared on farms. Know that recipes can be adapted to suit nutritional needs and dietary requirements. Know that nutritional information is found on food packaging. Know that coloured chopping boards can prevent cross-contamination. Know that food packaging serves many purposes.	Know that ‘flavour’ is how a food or drink tastes. Know that many countries have ‘national dishes’ which are recipes associated with that country. Know that ‘processed food’ means food that has been put through multiple changes in a factory. Understand that it is important to wash fruit and vegetables before eating to remove any dirt and

	Know that 'ingredients' means the items in a mixture or recipe. Know how to cut, grate, snip and spread to prepare foods.	is as important as taste. Know that similar coloured fruits and vegetables often have similar nutritional benefits.	products often have a target audience.		insecticides. Understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).
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DIGITAL WORLD	Year 3	Year 6
	Wearable Technology	Navigating the World
Design	Suggest which Micro:bit features might be useful and justify ideas. Draw and manipulate 2D shapes using CAD to produce a point of sale badge. Develop design ideas through annotated sketches to create a product concept. Develop design criteria to respond to a design brief.	Write a design brief from information submitted by a client. Develop design criteria to fulfil the client's request. Suggest additional functions for a navigation tool. Develop a product idea through annotated sketches. Place, manoeuvre and combine 3D objects using CAD.
Make	Follow a list of design requirements. Write a program to control (button press) and/or monitor (sense light) that starts a flashing LED algorithm. Create 3D structures using modelling materials.	Consider materials and their functional properties, especially sustainable and recyclable ones (e.g. cork and bamboo). Explain material choices as part of a product concept. Program an N, E, S, W cardinal compass.
Evaluate	Analyse and evaluate wearable technology. Use feedback from peers to improve design.	Explain how the program fits the design criteria and would be useful in a navigation tool. Develop an awareness of sustainable design. Identify industries that use 3D CAD modelling and explain why. Describe how the product concept meets the client's request. Pitch the product concept, explaining key features and demonstrating a functional program.
Technical knowledge	A loop is code that repeats something until stopped. A Micro:bit is a pocket-sized, codeable computer. A simulator replicates the functions of an existing piece of technology. The 'digital revolution' and products that evolved from it. Point of sale display. CAD stands for computer-aided design. A focus group gives feedback on ideas.	Designers write design briefs and develop design criteria to fulfil a client's request. 'Multifunctional' means a product has more than one function. Magnetometers measure the Earth's magnetic field to show which direction you are facing. Accelerometers detect movement. Sensors allow a product to function without human input.