D & T Progression Document

Rossmere Primary School

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Big Idea	Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Humankind	**Everyday products**	Name and explore a range of everyday products and describe how they are used. Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose.	Explain how an everyday product could be improved. Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive.	Explain how an existing product benefits the user. Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box.	Investigate and identify the design features of a familiar product. Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable.	Explain how the design of a product has been influenced by the culture or society in which it was designed or made. Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. The design of products needs to take into account	Analyse how an invention or product has significantly changed or improved people's lives. People's lives have been improved in countless ways due to new inventions and designs. For example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used in over half a million homes during the Second World War. It saved the lives of many people caught in bombing raids.

						the culture of the target audience. For example, colours might mean very different things in different cultures.	
	Staying safe	Follow the rules to keep safe during a practical task. Rules are made to keep people safe from danger. Safety rules include always listening carefully and following instructions, using equipment only as and when directed, wearing protective clothing if appropriate and washing hands before touching food.	Work safely and hygienically in construction and cooking activities. Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills.	Use appliances safely with adult supervision. Electrical appliances must only be used under the supervision of an adult. Safety rules must also be followed when using electricity: fingers and other objects must not be put into electrical outlets, anything with a cord or plug should never be used around water and a plug should never be pulled out by its cord.	Work safely with everyday chemical products under supervision, such as disinfectant hand wash and surface cleaning spray. Chemicals are used in the home every day. They include cleaning products, such as bleach and disinfectant, but also paints, glues, oils, pesticides and medicines. Most chemical products carry a hazard symbol showing in what way the chemical could be harmful. Chemicals should only be used under adult supervision. Appropriate safety precautions, such as wearing goggles	Explain the functionality and purpose of safety features on a range of products. Safety features are often incorporated into products that might cause harm. Some examples include the child-safety caps on medicine bottles, seatbelts in cars, covers for electrical sockets and finger guards on doors.	Demonstrate how their products take into account the safety of the user. The safety of the user has to be taken into account when designing a new product. Methods to help keep users safe include providing clear instructions for use; clear indication of the age range for which it is designed; safety features (such as child-resistant packaging); warning symbols and electrical safety checks.

					and gloves, working in a well-ventilated room, wiping up spills and tying back long hair, should be taken.		
Processes	**Electricity**	Identify products that use electricity to make them work and describe how to switch them on and off. Electricity is a form of energy. Many household appliances use electricity, such as kettles, televisions and washing machines. They can be switched on by completing the circuit to allow the flow of electricity or off by breaking the circuit to prevent electricity from flowing. This can be a switch on the appliance or a wall socket switch.	Create an operational, simple series circuit. A series circuit is made up of an energy source, such as a battery or cell, wires and a bulb. The circuit must be complete for the electricity to flow.	Incorporate a simple series circuit into a model. An electric circuit can be used in a model, such as a lighthouse. It can be controlled using a switch.	Incorporate circuits that use a variety of components into models or products. Components can be added to circuits to achieve a particular goal. These include bulbs for lighthouses and torches, buzzers for burglar alarms and electronic games, motors for fairground rides and motorised vehicles and switches for lights and televisions.	Use electrical circuits of increasing complexity in their models or products, showing an understanding of control. Electrical circuits can be controlled by a simple on/off switch, or by a variable resistor that can adjust the size of the current in the circuit. Real-life examples are a dimmer switch for lights or volume control on a stereo.	Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use programming to control their products. Computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors.
	Mechanisms and movement	Use wheels and axles to make a simple moving model. An axle is a rod or spindle that	Use a range of mechanisms (levers, sliders, wheels and axles) in models or	Explore and use a range of mechanisms (levers, sliders, axles, wheels and	Explore and use a range of mechanisms (levers, axles, cams, gears and	Use mechanical systems in their products, such as pneumatics and hydraulics.	Explain and use mechanical systems in their products to meet a design brief.

		passes through the centre of a wheel to connect two wheels.	products. A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams.	cams) in models or products. Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion.	pulleys) in models or products. Mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets; linkages in moving vehicles or puppets; gears in motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures.	Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing. Hydraulic mechanisms work in a similar way, but instead of air, the system is filled with a liquid, usually water. It is important that the system is air or watertight.	Mechanical systems can include sliders, levers, linkages, gears, pulleys and cams. Other mechanisms include pneumatics and hydraulics.
Creativity	**Generation of ideas**	Create a design to meet simple design criteria. Design criteria are the explicit goals that a project must achieve.	Generate and communicate their ideas through a range of different methods. Ideas can be communicated in a variety of ways, including written work, drawings and diagrams,	Develop design criteria to inform a design. Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use,	Use annotated sketches and exploded diagrams to test and communicate their ideas. Annotated sketches and exploded diagrams show specific parts of a design, highlight sections	Use pattern pieces and computer-aided design packages to design a product. A pattern piece is a drawing or shape used to guide how to make something. There are many different	Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways. Design criteria should cover the

			modelling, speaking and using information and communication technology.	appearance, cost and target user.	or show functions. They communicate ideas in a visual, detailed way.	computer-aided design packages for designing products.	intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.
	Use of ICT	Use design software to create a simple plan for a design. Computer-aided design is when computers are used to help design products. It has advantages over paper design in that it will show how finished products will look. Different colours and textures can also be trialled.	Use design software to create a simple labelled design or plan. Computer software can be used to help design or plan a product. Advantages include identifying and solving problems before the product is made and experimenting with different materials and colours. Labels can	Write a program to make something move on a tablet or computer screen. A program is a set of instructions written to perform a specified task on a computer.	Write a program to control a physical device, such as a light, speaker or buzzer. Remote control is controlling a machine or activity from a distance. Computers can be used to remotely control a device, such as a light, speaker or buzzer.	Link a physical device to a computer or tablet so that it can be controlled (such as changing motor speed or turning an LED on and off) by a program. Equipment and devices can be controlled by pressing buttons on a control panel, such as on a washing machine or microwave.	Use a sensor to monitor an environmental variable, such as temperature, sound or light. Computer monitoring uses sensors as a scientific tool to record information about environmental changes over time. Computer monitoring can also log data from sensors and record the resulting

			be added to designs for clarity.				information in a table or graph.
	Structures	Construct simple structures, models or other products using a range of materials. Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink.	Explore how a structure can be made stronger, stiffer and more stable. Structures can be made stronger, stiffer and more stable by using cardboard rather than paper and triangular shapes rather than squares. A broader base will also make a structure more stable.	Create shell or frame structures using diagonal struts to strengthen them. Shell structures are hollow, 3-D structures with a thin outer covering, such as a box. Frame structures are made from thin, rigid components, such as a tent frame. The rigid frame gives the structure shape and support. Diagonal struts can strengthen the structure.	Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them. A prototype is a mock-up of a design that will look like the finished product but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'Jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and	Build a framework using a range of materials to support mechanisms. Various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes.	Select the most appropriate materials and frameworks for different structures, explaining what makes them strong. Strength can be added to a framework by using multiple layers. For example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes because they are more rigid. Frameworks can be further strengthened by adding an outer cover.

					strengthen them).		
Investigation	**Investigation**	Select the appropriate tool for a simple practical task. Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking.	Select the appropriate tool for a task and explain their choice. Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials.	Use tools safely for cutting and joining materials and components. Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision.	Select, name and use tools with adult supervision. Useful tools for cutting include scissors, craft knives, junior hacksaws with pistol grip and bench hooks. Useful tools for joining include glue guns. Tools should only be used with adult supervision and safety rules must be followed.	Name and select increasingly appropriate tools for a task and use them safely. There are many rules for using tools safely and these may vary depending on the tools being used. For example, someone using a chisel should chip or cut with the cutting edge pointing away from their body. All tools should be cleaned and put away after use, and should not be used if they are loose or cracked.	Select appropriate tools for a task and use them safely and precisely. Precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly.
	Evaluation	Talk about their own and each other's work, identifying strengths or weaknesses and offering support. A strength is a good quality of a piece of work. A	Explain how closely their finished products meet their design criteria and say what they could do better in the future. Finished products can be compared with	Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account. Asking questions can help	Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making	Test and evaluate products against a detailed design specification and make adaptations as they develop the product. Testing a product against the design criteria will	Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others. Design is an iterative process, meaning

		weakness is an area that could be improved.	design criteria to see how closely they match. Improvements can then be planned.	others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.	improvements. Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made.	highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture.	alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured, and explaining these evaluations to others, can help to refine it.
Materials	**Materials for purpose**	Select and use a range of materials, beginning to explain their choices. Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be	Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect. Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and	Plan which materials will be needed for a task and explain why. Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost.	Choose from a range of materials, showing an understanding of their different characteristics. Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the	Select and combine materials with precision. Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques.	Choose the best materials for a task, showing an understanding of their working characteristics. It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility,

		used for windows.	strong but it can be difficult to paint.		specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season.		waterproofing, texture, colour, cost and availability.
Nature	**Food preparation and cooking**	Measure and weigh food items using non-standard measures, such as spoons and cups. Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end.	Prepare ingredients by peeling, grating, chopping and slicing. Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and	Prepare and cook a simple savoury dish. Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning.	Identify and use a range of cooking techniques to prepare a simple meal. Cooking techniques include baking, boiling, frying, grilling and roasting.	Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish. Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one.	Follow a recipe that requires a variety of techniques and source the necessary ingredients independently. Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses.

			apples.				
	Nutrition	Select healthy ingredients for a fruit or vegetable salad. Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day.	Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal. A healthy diet should include meat or fish, starchy foods (such as potatoes or rice), some dairy foods, a small amount of fat and plenty of fruit and vegetables.	Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars). There are five main food groups that should be eaten regularly as part of a balanced diet: fruit and vegetables; carbohydrates (potatoes, bread, rice and pasta); proteins (beans, pulses, fish, eggs and meat); dairy and alternatives (milk, cheese and yoghurt) and fats (oils and spreads). Foods high in fat, salt and sugar should only be eaten occasionally as part of a healthy, balanced diet.	Design a healthy snack or packed lunch and explain why it is healthy. Healthy snacks include fresh or dried fruit and vegetables, nuts and seeds, rice cakes with low-fat cream cheese, homemade popcorn or chopped vegetables with hummus. A healthy packed lunch might include a brown or wholemeal bread sandwich containing eggs, meat, fish or cheese, a piece of fresh fruit, a low-sugar yoghurt, rice cake or popcorn and a drink, such as water or semi-skimmed milk.	Evaluate meals and consider if they contribute towards a balanced diet. A balanced diet gives your body all the nutrients it needs to function correctly. This means eating a wide variety of foods in the correct proportions.	Plan a healthy weekly diet, justifying why each meal contributes towards a balanced diet. Eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet.
	Origins of food	Sort foods into groups by whether they are from an animal or plant source. Some	Identify the origin of some common foods (milk, eggs, some meats, common fruit and	Identify and name foods that are produced in different places. The types of food	Identify and name foods that are produced in different places in the UK and	Describe what seasonality means and explain some of the reasons why it is beneficial.	Explain how organic produce is grown. Organic produce is food that has been

		foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts.	vegetables). Food comes from two main sources: animals and plants. Cows provide beef, sheep provide lamb and mutton and pigs provide pork, ham and bacon. Examples of poultry include chickens, geese and turkeys. Examples of fish include cod, salmon and shellfish. Milk comes mainly from cows but also from goats and sheep. Most eggs come from chickens. Honey is made by bees. Fruit and vegetables come from plants. Oils are made from parts of plants. Sugar is made from plants called sugar cane and sugar beet. Plants also give us nuts, such as almonds, walnuts and	that will grow in a particular area depend on a range of factors, such as the rainfall, climate and soil type. For example, many crops, such as potatoes and sugar beet, are grown in the south-east of England. Wheat, barley and vegetables grow well in the east of England.	beyond. Particular areas of the world have conditions suited to growing certain crops, such as coffee in Peru and citrus fruits in California in the United States of America.	Seasonality is the time of year when the harvest or flavour of a type of food is at its best. Buying seasonal food is beneficial for many reasons: the food tastes better; it is fresher because it hasn't been transported thousands of miles; the nutritional value is higher; the carbon footprint is lower, due to reduced transport; it supports local growers and is usually cheaper.	grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives. Organic farmers use crop rotation, animal and plant manures, hand-weeding and biological pest control.

			hazelnuts.				
Comparison	**Compare and contrast**	Describe the similarities and differences between two products. Two products can be compared by looking at a set of criteria and scoring both products against each one.	Compare different brands of the same product and explain their similarities and differences. Products can be compared by looking at particular characteristics of each and deciding which is better suited to the purpose.	Explain the similarities and difference between the work of two designers. Work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market.	Create and complete a comparison table to compare two or more products. A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored.	Survey users in a range of focus groups and compare results. A focus group is a small group of people whose reactions and opinions about a product are taken and studied. Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria.	Create a detailed comparative report about two or more products or inventions. Products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money.
Significance	**Significant people**	Describe why a product is important. The importance of a product may be that it fulfils its goals and performs a useful purpose.	Explain why a designer or inventor is important. Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles.	Describe how key events in design and technology have shaped the world. Key inventions in design and technology have changed the way people live.	Explain how and why a significant designer or inventor shaped the world. Significant designers and inventors can shape the world.	Describe the social influence of a significant designer or inventor. Many new designs and inventions influenced society. For example, labour-saving devices in the home reduced the amount of housework, which was traditionally done by women.	Present a detailed account of the significance of a favourite designer or inventor. The significance of a designer or inventor can be measured in various ways. Their work may benefit society in health, transport, communication, education, the built environment

						This enabled them to have jobs.	or technology. It may enhance culture in different areas, such as fashion, ceramics or computer games.