## Witheridge CofE Primary Academy DT Knowledge and Skills Progression Map

|  | Key Stage 1 |  | Lower Key Stage 2 |  | Upper Key Stage 2 |  |
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| Everyday products | 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. Name and explore a range of everyday products and describe how they are used. covered | Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive. Explain how an everyday product could be improved. optional | Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box. Explain how an existing product benefits the user. Assign | 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. Investigate and identify the design features of a familiar product. covered $x$ 3optional | Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. <br> 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 the culture of the target audience. <br> For example, colours might mean very different | 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. <br> Analyse how an invention or product has significantly changed or improved people's lives. Assign |


|  |  |  |  |  | things in different cultures. Explain how the design of a product has been influenced by the culture or society in which it was designed or made. covered $x$ 2optional |  |
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| Staying safe | Rules are made to keep people safe from danger. <br> Safety rules include <br> always <br> listening <br> carefully and following instructions, using equipment only as and when directed, wearing protective clothing if appropriate and washing hands before touching food. Follow the rules to keep safe during a practical task. covered x 2 | Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriatel $y$ and wiping up spills. Work safely and hygienically in construction and cooking activities. optional | 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. Use appliances safely with adult supervision. covered | 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 and gloves, working in a well-ventilat ed room, wiping up spills and tying back long hair, should be taken. Work | Safety <br> 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. Explain the functionality and purpose of safety features on a range of products. optional | 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-resista nt packaging); warning symbols and electrical safety checks. Demonstrate how their products take into account the safety of the user. Assign |
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$\left.\begin{array}{|l|l|l|l|l|l|}\hline & & & & \text { safely with } & \\ \text { everyday } \\ \text { chemical } \\ \text { products }\end{array}\right]$
$\left.\begin{array}{|l|l|l|l|l|l|}\hline & & & \text { motion into } \\ \text { up-and-dow } \\ \text { n motion. }\end{array}, \begin{array}{l}\text { gears and } \\ \text { pulleys) in } \\ \text { models or }\end{array}\right]$

|  | switch. <br> Identify <br> products <br> that use <br> electricity to <br> make them <br> work and <br> describe <br> how to <br> switch them <br> on and off. <br> Assign |  |  |  |  |  |
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| Generation of ideas | Design criteria are the explicit goals that a project must achieve. Create a design to meet simple design criteria. coveredopti onal $\mathbf{x} 6$ | Ideas can be communicat ed in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communicati on technology. Generate and communicat e their ideas through a range of different methods. covered | Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. Develop design criteria to inform a design. covered | Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicat e ideas in a visual, detailed way. Use annotated sketches and exploded diagrams to test and communicat e their ideas. covered $x$ 3optional x 2 | A pattern piece is a drawing or shape used to guide how to make something. There are many different computer-ai ded design packages for designing products. Use pattern pieces and computer-ai ded design packages to design a product. covered $x 2$ | Design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicat ed in a range of ways, including through discussion, annotated sketches, cross-sectio nal and exploded diagrams, prototypes, pattern pieces and computer-ai ded design. Develop design criteria for a functional and appealing product that is fit for |


|  |  |  |  |  |  | purpose, communicati ng ideas clearly in a range of ways. optional |
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| Structures | Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. <br> Plastic is light and can float. Clay is heavy and will sink. Construct simple structures, models or other products using a range of materials. covered $x$ 16optional | 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. Explore how a structure can be made stronger, stiffer and more stable. covered $x$ 5optional x 3 | Shell <br> structures <br> are hollow, <br> 3-D <br> structures <br> with a thin <br> outer <br> covering, <br> such as a <br> box. Frame <br> structures <br> are made <br> from thin, <br> rigid <br> components, <br> such as a <br> tent frame. <br> The rigid <br> frame gives <br> the structure <br> shape and <br> support. <br> Diagonal <br> struts can <br> strengthen <br> the <br> structure. <br> Create shell <br> or frame <br> structures <br> using <br> diagonal <br> struts to <br> strengthen <br> them. <br> optional | 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. <br> Shell and frame structures can be strengthene d 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 | 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. Build a framework using a range of materials to support mechanisms Assign | 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 strengthene d by adding an outer cover. Select the most appropriate materials and frameworks for different structures, explaining |


|  |  |  |  | straighten and strengthen them). Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them. covered |  | what makes them strong. covered $x$ 2optional |
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| Use of ICT | Computer-ai ded 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. <br> Different colours and textures can also be trialled. Use design software to create a simple plan for a design. Assign | Computer software can be used to help design or plan a product. <br> Advantages include identifying and solving problems before the product is made and experimentin g with different materials and colours. Labels can be added to designs for clarity. Use design software to create a simple labelled design or plan. Assign | A program is a set of instructions written to perform a specified task on a computer. Write a program to make something move on a tablet or computer screen. Assign | 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. Write a program to control a physical device, such as a light, speaker or buzzer. Assign | Equipment and devices can be controlled by pressing buttons on a control panel, such as on a washing machine or microwave. 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. Assign | Computer monitoring uses <br> sensors as a scientific tool to record information about environment al changes over time. Computer monitoring can also log data from sensors and record the resulting information in a table or graph. Use a sensor to monitor an environment al variable, such as temperature, sound or light. Assign |


| Investigation | 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 simple practical task. covered $x$ 2optional x 5 | Different tools have characteristi cs 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. Select the appropriate tool for a task and explain their choice. covered $x 4$ | Specific tools can be used for cutting, such as saws. <br> Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. <br> 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. Use tools safely for cutting and joining materials and components. coveredopti onal $\mathbf{x} 2$ | 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. Select, name and use tools with adult supervision. coveredopti onal $x 2$ | 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. Name and select increasingly appropriate tools for a task and use them safely. covered $x$ 2optional x 3 | Precision is important in producing a polished, finished product. Correct selection of tools and careful measuremen t can ensure the parts fit together correctly. Select appropriate tools for a task and use them safely and precisely. coveredopti onal $x 2$ |
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| Evaluation | A strength is a good quality of a piece of work. A weakness is an area that could be improved. Talk about their own and each other's work, identifying strengths or weaknesses and offering support. covered $x$ 2optional x 3 | Finished <br> products <br> can be <br> compared <br> with design <br> criteria to <br> see how <br> closely they <br> match. <br> Improvemen <br> ts can then <br> be planned. <br> Explain how <br> closely their <br> finished <br> products <br> meet their <br> design <br> criteria and <br> say what <br> they could <br> do better in <br> the future. <br> covered $x$ <br> 2optional x 3 | Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. Suggest improvemen ts to their products and describe how to implement them, beginning to take the views of others into account. optional x 2 | Evaluation can be done by <br> 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 improvemen ts and explaining why they should be made. 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 improvemen | Testing a product against the design criteria will highlight anything that needs improvemen $t$ or redesign. Changes are often made to a design during manufacture . Test and evaluate products against a detailed design specification and make adaptations as they develop the product. covered $x 3$ | Design is an iterative process, meaning alterations and improvemen ts are made continually throughout the manufacturi ng process. Evaluating a product while it's being manufacture d, and explaining these evaluations to others, can help to refine it. Demonstrate modification s made to a product as a result of ongoing evaluation by themselves and to others. optional |
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| Materials for purpose | Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows. Select and use a range of materials, beginning to explain their choices. covered $x$ 7optional x 3 | ```Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint. Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect. covered x 10optional x 3``` | Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. Plan which materials will be needed for a task and explain why. covered $x 3$ | ```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 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. Choose from a range of materials, showing an understandi ng of their different characteristi cs. covered x 11optional x 4``` | Materials <br> should be <br> cut and <br> combined <br> with <br> precision. <br> For example, pieces of fabric could be cut with sharp <br> scissors and sewn together using a variety of stitching techniques. Select and combine materials with precision. covered $x$ 6optional | It is important to understand the characteristi cs of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofin g, texture, colour, cost and availability. Choose the best materials for a task, showing an understandi ng of their working characteristi cs. covered $x$ 4optional |
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| Decorating and embellishing textiles | Fabric can be decorated using materials and small objects, such as buttons and sequins. Decorations can be attached to the fabric by gluing, stapling or tying. Use gluing, stapling or tying to decorate fabric, including buttons and sequins. Assign | Embellishme nt is a decorative detail or feature added to something to make it more attractive. Add simple decorative embellishme nts, such as buttons, prints, sequins and appliqué. Assign | A loom weaving is a piece of fabric that has been woven on a loom by interlacing threads. An embellishme nt is a decorative detail or feature, such as a silk flower, tassel or bow, added to something to make it more attractive. Decorate a loom weaving using embellishme nts, such as natural or silk flowers, tassels and bows. Assign | Block printing techniques and fabric paint are used to create decorative, repeated patterns on fabrics. Create detailed decorative patterns on fabric using printing techniques. Assign | Applique is a technique where pieces of material are attached to another material by stitching or gluing. Use applique to add decoration to a product or artwork. covered | Fastenings hold a piece of clothing together. <br> Types of fastenings include zips, press studs, Velcro and buttons. Use different methods of fastening for function and decoration, including press studs, Velcro and buttons. Assign |
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| Food preparation and cooking | Using non-standar d 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. <br> Measure and weigh food items using non-standar d measures, such as spoons and cups. covered $x$ 3optional | 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 apples. <br> Prepare ingredients by peeling, grating, chopping and slicing. optional | Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. <br> Prepare and cook a simple savoury dish. <br> Assign | Cooking techniques include baking, boiling, frying, grilling and roasting. Identify and use a range of cooking techniques to prepare a simple meal or snack. covered x 3optional x 2 | Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. <br> Savoury dishes usually have a salty or spicy flavour rather than a sweet one. Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish. covered | Ingredients can usually be bought at supermarket s, but specialist shops may stock different items. <br> Greengrocer s sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessen s usually sell some unusual prepared foods, as well as cold meats and cheeses. Follow a recipe that requires a variety of techniques and source the necessary ingredients independentl y. covered x 4optional |
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| Nutrition | Fruit and vegetables are an important part of a healthy diet. It is recommende d that people eat at least five portions of fruit and vegetables every day. Select healthy ingredients for a fruit or vegetable salad. covered x 3 | 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. Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal. Assign | ```There are five main food groups that should be eaten regularly as part of a balanced diet: fruit and vegetables; carbohydrat es (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. Identify the main food groups (carbohydrat es, protein, dairy, fruits and vegetables, fats and sugars). Assign``` | ```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-skimm ed milk. Design a healthy snack or packed lunch and explain why it is healthy. Assign``` | 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. Evaluate meals and consider if they contribute towards a balanced diet. Assign | 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. Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet. covered |
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| Origins of food | Some foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts. Sort foods into groups by whether they are from an animal or plant source. coveredopti onal | 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. <br> 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 | The types of food 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. Identify and name foods that are produced in different places. Assign | 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. Identify and name foods that are produced in different places in the UK and beyond. Assign | 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. <br> Describe what seasonality means and explain some of the reasons why it is beneficial. covered x 3optional | Organic produce is food that has been 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-weedin g and biological pest control. Explain how organic produce is grown. <br> Assign |
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|  |  | and sugar beet. Plants also give us nuts, such as almonds, walnuts and hazelnuts. Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables). covered |  |  |  |  |
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| Compare and contrast | Two products can be compared by looking at a set of criteria and scoring both products against each one. <br> Describe the similarities and differences between two products. optional | Products can be compared by looking at particular characteristi cs of each and deciding which is better suited to the purpose. Compare different or the same products from the same or different brands. <br> Assign | Work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market. Explain the similarities and difference between the work of two designers. Assign | A <br> comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored. <br> Create and complete a comparison table to compare two or more products. Assign | A focus group is a small group of people whose reactions and opinions about a product are taken and studied. <br> Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria. Survey users in a range of focus groups and compare | 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. Create a detailed comparative report about two or more products or inventions. Assign |


|  |  |  |  |  | results. covered |  |
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| Significant people | The importance of a product may be that it fulfils its goals and performs a useful purpose. Describe why a product is important. covered | Many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles. <br> Explain why a designer or inventor is important. covered | Key inventions in design and technology have changed the way people live. <br> Describe how key events in design and technology have shaped the world. optional | Significant designers and inventors can shape the world. Explain how and why a significant designer or inventor shaped the world. coveredopti onal | Many new designs and inventions influenced society. For example, labour-savin g devices in the home reduced the amount of housework, which was traditionally done by women. This enabled them to have jobs. <br> Describe the social influence of a significant designer or inventor. Assign | The <br> significance <br> of a designer <br> or inventor can be measured in various ways. Their work may benefit society in health, transport, communicati on, education, the built environment or technology. It may enhance culture in different areas, such as fashion, ceramics or computer games. Present a detailed account of the significance of a favourite designer or inventor. |

