Blackheath Primary
D&T INTENT

The progression grid outlines the specific knowledge and skills which defines what our pupils are expected to be able to know and do in DT by the end of each phase of their learning.

Generation of ideas

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
Currently under review due to new EYFS Reform Framework September2021	As early designers, children will know that: • Design criteria are the explicit goals that a project must achieve. • Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.	As developing designers, children will know that: • 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. • Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way.	As secure designers, children will know that: • A pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design packages for designing products. • Design criteria should cover the 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.
Currently under review due to new EYFS Reform Framework September2021	As early designers, children will have the skills to: • Create a design to meet simple design criteria. • Generate and communicate their ideas through a range of different methods.	As developing designers, children will have the skills to: • Develop design criteria to inform a design. • Use annotated sketches and exploded diagrams to test and communicate their ideas.	As a secure designers, children will have the skills to: • Use pattern pieces and computer-aided design packages to design a product. • Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.

Use of ICT

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
Currently under review due to new EYFS Reform Framework September2021 •	As early designers children will know: • That computer-aided design is when computers are used to help design or plan 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. • Advantages to computer aided design include identifying and solving problems before the product is made and labels can be added to designs for clarity.	As developing designers, children will know that: • A program is a set of instructions written to perform a specified task on a computer. • 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.	As secure designers, children will know that: • Equipment and devices can be controlled by pressing buttons on a control panel, such as on a washing machine or microwave. • 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 information in a table or graph.
Currently under review due to new EYFS Reform Framework September2021 •	As early designers, children will have the skills to: • Use design software to create a simple labelled design or plan.	As developing designers, children will have the skills to: • Write a program to make something move/control a physical device, such as a light, speaker or buzzer.on a tablet or computer screen.	As secure designers, children will have the skills to: • 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. • Use a sensor to monitor an environmental variable, such as temperature, sound or light.

Structures

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:

Currently under review due to new EYFS Reform Framework September2021 •	As early designers, children will know: • *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.* • *That 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.*	As developing designers, children will know that: • *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.* • *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 'Jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and strengthen them).*	As secure designers, children will know that: • *Various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using a variety of materials* • *Strength can be added to a framework by using multiple layers. For example, corrugated cardboard .Frameworks can be further strengthened by adding an outer cover.*
•	As early designers, children will have the skills to: • *Construct simple structures, models or other products using a range of materials.* • *Explore how a structure can be made stronger, stiffer and more stable.*	As developing designers, children will have the skills to: • *Create shell or frame structures and then prototypes using things such as diagonal struts to strengthen, stiffen and reinforce them.*	As secure designers, children will have the skills to: • *Build a framework using a range of materials to support mechanisms.* • *Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.*

Investigate

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
Currently under review due to new EYFS Reform Framework September2021	As early designers, children will know: • *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.*	As developing designers, children will know: • *Specific tools/products and their purpose and that these can be used for specific purposes, e.g. saw for cutting, wood can be joined using glue, nails, staples, or a combination of these.* • *Safety rules must be followed to prevent injury from sharp blades. Tools should only be used with adult supervision and safety rules must be followed.*	As secure designers , children will know: • *There are many rules for using tools safely and these may vary depending on the tools being used. All tools should be cleaned and put away after use, and should not be used if they are loose or cracked.* • *Precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure a quality finished product.*
Currently under review due to new EYFS Reform Framework September2021	As early designers, children will have the skills to: • *Select the appropriate tool for a simple practical task and explain their choice*	As developing designers, children will have the skills to: • *Name and use tools safely for cutting and joining materials and components with adult supervision.*	As secure designers ,children will have the skills to: • *Select appropriate tools for a task and use them safely and precisely.*

Evaluation (Including strands from Compare and Contrast and Everyday Objects)

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
Currently under review due to new EYFS Reform Framework September2021 •	As early designers, children will know: • A strength is a good quality of a piece of work. A weakness is an area that could be improved. • Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned. • Two products can be compared by looking at a set of criteria and deciding which is better suited to the purpose. • That 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. • That products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive.	As developing designers, children will know: • Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. • 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. • A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored • That particular products have been designed for specific tasks, such as nail clippers • That 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	As secure designers, children will know: • Testing a product against the design criteria will highlight anything that needs improvement or redesign. 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. • That 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 • Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria. • That culture and society 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. • That 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
Currently under review due to new EYFS Reform Framework September2021 •	As early designers, children will have the skills to: • Talk about their own and each other's work, identifying strengths or weaknesses. • Explain how closely their finished products meet their design criteria and say what they could do better in the future. • Compare different brands of the same product and explain their similarities and differences. • Name and explore a range of everyday products and describe how they are used. • Explain how an everyday product could be improved.	As developing designers, children will have the skills to: • Identify what has worked well and what aspects of their products could be improved, and how. They can act on their own suggestions and those of others when making improvements. • Create and complete a comparison table to compare two or more products. • Explain how an existing product benefits the user. • Investigate and identify the design features of a familiar product.	As secure designers, children will have the skills to: • Test and evaluate products against a detailed design specification. • Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others • Survey users in a range of focus groups and create a detailed comparative report about two or more products or inventions. • Explain how the design of a product has been influenced by the culture or society in which it was designed or made and how it has changed or improved people's lives.

Food Preparation and Cooking

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
Currently under review due to new EYFS Reform Framework September2021 •	As early designers children will know: • Using non-standard measures is a way of measuring that does not involve reading scales. For example, using a balance scale and lumps of plasticine. • That some ingredients need to be prepared before they can be cooked or eaten e.g peeling skins using a vegetable peeler.	As developing designers, children will know: • That preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning. • That cooking techniques include baking, boiling, frying, grilling and roasting.	As secure designers, children will know: • That 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. • That ingredients can usually be bought at supermarkets, but specialist shops may stock different items e.g. Greengrocers sell fruit and vegetables
•	As early designers, children will have the skills to: • Measure and weigh food items using non-standard measures, such as spoons and cups. • Prepare ingredients by peeling, grating, chopping and slicing.	As developing designers children will have the skills to: • Prepare and cook a simple savoury dish. • Identify and use a range of cooking techniques to prepare a simple meal.	As secure designers, children will have the skills to: • follow a recipe that requires a variety of techniques and source the necessary ingredients independently to cook a sweet or savoury dish.

Nutrition

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
	As early designers, children will know: • That fruit and vegetables are an important part of a healthy diet. (5 a day) • That 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.	As developing designers, children will know: • That there are five main food groups that should be eaten regularly as part of a balanced diet. Foods high in fat, salt and sugar should only be eaten occasionally as part of a healthy, balanced diet. • That 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 and what a healthy packed lunch might include.	As secure designers, children will know: • That 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. • That eating a balanced diet is a positive lifestyle choice that should be sustained over time.
	As early designers, children will have the skills to: • Select healthy ingredients for a fruit or vegetable salad. • Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.	As developing designers children will have the skills to: • Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars). • Design a healthy snack or packed lunch and explain why it is healthy.	As secure designers children will know: • Evaluate meals and consider if they contribute towards a balanced diet. • Plan a healthy weekly diet, justifying why each meal contributes towards a balanced diet.

Origins of Food

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
Currently under review due to new EYFS Reform Framework September2021	As early designers, children will know: • That food comes from two main sources: animals and plants and give examples of these.	As developing designers, children will know: • That 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. • That particular areas of the world have conditions suited to growing certain crops, such as coffee in Peru	As secure designers, children will know: • That 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 e.g. the food tastes better; • That organic produce is food that has been grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives.
	As early designers, children will have the skills to: • Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).	As developing designers children will have the skills to • Identify and name foods that are produced in different places in the UK and beyond.	As secure designers, children will have the skills to: • Describe what seasonality means and explain some of the reasons why it is beneficial. • Explain how organic produce is grown.

Materials for Purpose

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
Currently under review due to new EYFS Reform Framework September2021	As early designers, children will know: • That different materials are suitable for different purposes, depending on their specific properties. • That 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.	As developing designers, children will know: • That materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. • It is important to select the correct material or component for the specific purpose, depending on the design criteria.	As secure designers, children will know: • That materials should be cut and combined with precision. • That it is important to understand the characteristics of different materials to select the most appropriate material for a purpose.
Currently under review due to new EYFS Reform Framework September2021	As early designers, children will have the skills to: • Select and use a range of materials, beginning to explain their choices. • Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.	As developing designers children will have the skills to • Plan which materials will be needed for a task and explain why. • Choose from a range of materials, showing an understanding of their different characteristics.	As secure designers, children will have the skills to: • Choose the best materials for a task, showing an understanding of their working characteristics and combine them with precision.

Electricity

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
	As early designers, children will know: • That electricity is a form of energy. Many household appliances use electricity.. 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. • That a series circuit is made up of an energy source, such as a battery or cell, wires and a bulb.	As developing designers, children will know: • That an electric circuit can be used in a model, such as a lighthouse. It can be controlled using a switch. • That components can be added to circuits to achieve a particular goal e.g. bulbs for lighthouses and torches	As secure designers, children will know: • That 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. • That computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors.
	As early designers, children will have the skills to: • Identify products that use electricity to make them work and describe how to switch them on and off. • Create an operational, simple series circuit.	As developing designers children will have the skills to • Incorporate simple circuits and circuits that use a variety of components into models or products.	As secure designers, children will have the skills to: • Use electrical circuits of increasing complexity in their models or products, showing an understanding of control. • Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use programming to control their products.

Mechanisms and Movement

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
	As early designers, children will know: • That an axle is a rod or spindle that passes through the center of a wheel to connect two wheels. • That 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.	As developing designers, children will know: • That levers, sliders, axles and cams are all devices which make movement easier. • That mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures.	As secure designers, children will know: • That 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. 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. • That mechanical systems can include sliders, levers, linkages, gears, pulleys and cams. Other mechanisms include pneumatics and hydraulics.
	As early designers, children will have the skills to: • Use wheels and axles to make a simple moving model. • Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.	As developing designers children will have the skills to • Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products.	As secure designers, children will have the skills to: • Explain and use mechanical systems in their products, such as pneumatics and hydraulics to meet a design brief

Staying Safe

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
	As early designers, children will know: • That 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. • That hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills	As developing designers, children will know: • That electrical appliances must only be used under the supervision of an adult. Safety rules must also be followed when using electricity • That chemicals are used in the home every day including bleach and disinfectant, but also paints, glues, oils, pesticides and medicines. Chemicals should only be used under adult supervision. Appropriate safety precautions should be taken.	As secure designers, children will know: • That safety features are often incorporated into products that might cause harm e.g. the child-safety caps on medicine bottles • That 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.
	As early designers, children will have the skills to: • Follow the rules to keep safe during a practical task. • Work safely and hygienically in construction and cooking activities.	As developing designers children will have the skills to: • Use appliances safely with adult supervision • Work safely with everyday chemical products under supervision, such as disinfectant hand wash	As secure designers, children will have the skills to: • Explain the functionality and purpose of safety features on a range of products. • Demonstrate how their products take into account the safety of the user.

Significant People

At EYFS:	At Key Stage One:	At Lower Key Stage Two:	At Upper Key Stage Two:
	As early designers, children will know: • That the importance of a product may be that it fulfils its goals and performs a useful purpose. • That many key individuals have helped to shape the world. These include engineers, scientists, designers, inventors and many other people in important roles	As developing designers, children will know: • That key inventions in design and technology have changed the way people live and that significant designers and inventors can shape the world	As secure designers, children will know: • That 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. This enabled them to have jobs. • That 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 or technology. It may enhance culture in different areas, such as fashion, ceramics or computer games.
	As early designers, children will have the skills to: • Describe why a product, designer or inventor is important.	As developing designers children will have the skills to: • Describe how and why a significant designer or inventor and key events in design and technology have shaped the world.	As secure designers, children will have the skills to: • Describe the social influence of a significant designer or inventor.