Characteristics of a Designer

- Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.
- An excellent attitude to learning and independent working.
- The ability to use time efficiently and work constructively and productively with others.
- The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject and knowledge of, up-to-date technological innovations in materials, products and systems.

DT Progression of Knowledge and Skills
Rodmersham 2023

	EYFS	Milestone 1	Milestone 2	Milestone 3
Structures	• Make verbal plans and material choices. • Develop their junk modelling skills. • Improve their fine motor skills with a variety of materials. • Joining materials in a variety of ways. • Joining different materials together. • Verbal evaluation of their own and the work of others with adult support. • And to know there are different materials that we can be used to make a model. They are all slightly different.	• Makes table structures from Card, tape and glue. • Learn how to turn 2-D nuts into 3-D structures. • Follow instructions to cut and assemble a structure. • Make a structure according to a design criteria. • Create joints and structures from paper and card and tape. • Build a strong structure by folding paper. • Evaluate, according to the design criteria, testing whether the structure is strong and stable, and altering it if it isn't. • To suggest points for improvements. • Explore the features of structures. • Compare the stability of different shapes. • Test, the strength of the own structure. • Identify the weakest part of the structure. • Evaluate the strength, stiffness, and stability of the structure. • Understand that the shape of materials can be changed to improve the strength of stiffness of structures. • Begin to understand different structures are used for different purposes. • Do you know that shapes and structures with white flat bases or legs are the most stable? • To understand the shape of a structure affect its strength. • To know that materials can be manipulated to improve the strength and fitness. • Do you know that a structure is something which has been formed or made from parts • To know that a stable structure is one which is firmly fixed and likely to change your move. • Do you know that a strong structure is one that does not break easily • To know that a stiff structure or material one is one that does not bend easily. • Do you know that the client is the person you are designing for? • Do you know that the design criteria is a list of points to ensure the product meets the clients needs. • Do you know that man-made structures are those made by people?	• To design a stable structure that is able to support white to create a frame with a structure with a focus on triangulation. • Independently measure and mark out accurately. • Select appropriate tools and equipment for particular tasks. • Do use the correct techniques to source safely • To explain why selecting appropriate materials is an important part of the design process. • Adapt and improve a structure by identifying points of weakness and reinforcing if necessary. • Suggesting points for improvements designed by others. • Do you understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce structures. • Properties are words that describe the form and function of materials. • To understand why material selection is important based on its properties. • To understand how to carry and use a saw safely.	

	EYFS	Milestone 1	Milestone 2	Milestone 3
Mechanisms and mechanical systems		• Explain how to adapt mechanisms using bridges or guides to control the movement. • Follow a designed to create a moving model using Leveson sliders. • Test of finish product seen, whether it moves as planned, and if not explaining how it can be fixed. • Review the success of the product by testing it with its intended audience. • To know that a mechanism is a part of an object that move together. • To know that a sliding mechanism moves an object from side to side. • Do you know that a slider mechanism has a slider, slots, guides and an object. • To know that bridges and guides are bits of cord that purposefully restrict the movement of the slider? • Do you know that in design and technology, we call a plan a design? • Design a vehicle that includes wheels, axles and axle holders that when combined, allow the wheels to move. • Evaluate different designs. • Test and adapt to design. • When testing wheel and axle mechanisms, identify what stops the wheels from turning and recognise that I will need an axle in order to move. • Do you know the different materials have different properties and are therefore suitable for different things? • To know that wheels need to be brown to rotate into move. • To understand for a wheel to move it. It must be attached to a rotating axle. • An axle moves with an axle holder which is fixed. • To know that a chassis needs to be balanced. • Do you know it is important to test your design as you go along so that any problems that occur can be solved.	• Generate ideas, using thumbnail sketches and exploded diagrams. • Learn the different types of drawings are used in design to explain ideas clearly. • To use syringes and balloons to create different types of pneumatic systems to make it functional. • Select materials due to their function and aesthetic characteristics • Manipulate materials to create different effects. By cutting, creasing, folding and weaving. • Use the views of others to improve designs • Test, and modify the outcome suggesting improvements. • Understand the purpose of exploded diagrams, through the eyes of the designer and their client understand how pneumatic systems work • Understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems, operate by drawing in, releasing and compressing air. • Understand as sketches, drawings, and diagrams, help to communicate design ideas. • To know that exploded diagrams are used to show how different parts of a product fit together. • Do you know that from sketches of small drawings to get an idea down on paper quickly?	• Two shapes to increase or decrease speed as a result of air resistance. • Personalise a design • Measure, mark and cut and assemble the increasing accuracy. • Make a model based on a chosen design. • Make a mechanism or structure, using slider spirits and falls to produce movement. • Evaluate the speed of a final product based on the effect of the shape on speed and the accuracy of workmanship on performance. • Evaluate the work of others and receiving feedback on their own work. • Suggest points for improvement. • Understand all moving things have kinetic energy. • Understand that kinetic energy is the energy that something has by being emotion. • Know that mechanisms control movement. • Understand can be used to change one kind of motion into another. • Understand that products change and evolve over time. • Know that a design brief is a description of what they are going to design and make.

Electricals and Electronics			• Plan the positioning of a bulb and its purpose. • Create a final design for a circuit. • Fit an electrical component. • Create a circuit with a working electrical circuit in switch. • Use appropriate equipment to cut and attach materials. • Learn to give and accept constructive criticism on their work and the work of others. • Test, the success of initial ideas against the design criteria and justify opinions evaluate electrical products. • Test and evaluate the success of a final product. • Understand that an electrical system is a group of components that work to transport electricity around a circuit. • Understand common features of an electric product. • List examples of common electrical products. • Understand an electrical product uses an electrical system to work. • Do you know a name and appearance of a bulb battery battery holder and crocodile wire to simply build circuits? • To understand the electrical conductors are materials that electricity can pass through. • To understand the electrical insulators and materials, which electricity cannot pass through. • Do you know that the battery contain stored electricity? • Do you know that an electrical circuit must be complete for electricity to flow. • Do you know that a switch can be used to complete and break in electrical circuit? • To understand how material choices can improve a product to serve its purpose. • Develop a Proto type • Create a 3-D structure using a net. • Create a program for a specific criteria. • Investigate and analyse products and compare their advantages and disadvantages. • Understand what logo is, and why they are important in the world of design and bus • Tester program for bugs. • Find and fix the bugs. • Understand what variables are in programming. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check your code for errors? • Do you know that a simulator can be use as a way of checking the code works • To understand, ergonomic and aesthetic	• To identify factors that could be changed on existing products and explain how these would alter the form and function of a product. • Developer design criteria based on findings from investigating an existing product. • To know that altering a product form and function by tinkering with its configuration • Construct a product with consideration for the design criteria. • Break down the construction process into step, so the others can make the product. • Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determine which parts of a product affect its function and which parts affect its form. • Analyse with the changes in configurations positively or negatively affect an existing product. • Do you know a motorized product is one that uses a motor to function to know that when there is a break in a series circuit all components turn off. • Do you know that an electric motor converts electrical energy into rotational movement, causing the motor, an axel, to spin. • Do you know that product analysis is critiquing the strengths and weaknesses of a product? • Do you know that configurations mean to the parts of a product are arranged. • Play some manoeuvre 3-D objects using a program such as CAD. • Change the properties of, or combine more than one 3-D objects, using a program such as CAD. • Consider materials and their functional properties. • Explain material choices for a product concept. • Explain how the product fits the criteria. • Identify key industries that utilize programs such as CAD for modelling and explain why • Explain the key functions of the product

Textiles	• Discuss what a good design eight • Design a simple pattern with paper. • Choose from the available materials. • Develop fine motor and cutting skills with scissors. • Explore fine motor skills, threading, and weaving with a variety of materials. • Reflect on the finish product and compare their design. • To know that threading is putting more material through an object	• To use a template to create a design. • Cut fabric neatly with scissors. • Use joining methods to decorate a product. • Secret steps for construction. • Reflect on the finish product. • Explaining what you like and what you don't like about your product. • Know that joining techniques means connecting to pieces of material together • Do you know that there are various temporary methods of joining fabric such as using staples, glue or pins? • Understand the different techniques for joining materials can be used for different purposes. • Understand if a template is used to cut out the same shape multiple times. • Do you know that drawing a design idea is useful to see how an idea will look. •	• To design and make a template from an existing product but apply an individual design criteria. • Follow your design criteria. Select and cut fabrics with ease using fabric scissors. • Thread needles with independence. • Tie knots with independence. • Sew to join fabric. • Complete design ideas with stuffing and sewing the edges • Evaluate the product and think of other ways in which to create similar items. • Do you know that appliqué is a way of mending or decorating a textile? • Do you know the two edges of fabric have been joined together is called a seam	• Design a product considering the main component shapes. • Create a template. • Consider the proportions of individual components. • Create a 3-D product from a 2-D design. • Measure, mark and cut fabric accurately and independently. • Create a strong and secure blanket stitch when joining fabric? • Thread needles independently. • So blanket stitch to join fabric. • Test and evaluate an end product and give points for further improvements. • To understand that it is easier to finish simpler designs to a high standard. • Do you know that small need stitches which are pulled taught are important to ensure that the product is strong and hold stuffing securely
Food	• Chop plasticine safely. • Chop fruit or vegetables with support. • Describe what food looks feels smells and tastes like. • know that vegetables and fruit are grown • To recognise and name some of the common vegetables • To know that eating fruit and vegetables is good for u do you know the different vegetables taste differently?	• Slice food safely, using a bridge of claw grip. • Construct, a product that meets a brief • Taste and evaluate different food combinations. • Describe appearance, smell and taste • Evaluate which group grip was most effective. • Know what information is included on packaging. • know the difference between fruits and vegetables? • To know that fruits grow on trees or vines • Slice and chop vegetables safely. • Describe the texture and smell of fruit and vegetables. • Taste test, food combinations and final products. • To understand what makes a balanced diet. • Do you know where the nutritional information is on a package? • Do you know what the five main food groups are. • To understand you need to eat a range of foods • To know that there are nutrients and substances in food that help us to grow and develop	• Create a healthy and nutritious recipe, considering the taste, texture and smell and appearance of the dish. • Follow the instructions within a recipe. • Establish and use design criteria to help test and review dishes. • Suggest points for improvement. • know the imported food has been brought into the country. • Know exported food has been sent to another country. • To understand the imported food travel from far away and this can negatively impact on the environment • to know that each fruit and vegetable gives us nutritional benefits because they include vitamins, minerals and fibre. • Do you know the safety for using, storing and cleaning a nice safely	• To create a healthy and nutritious recipe considering the taste, texture and smell and appearance of the dish. • Know how to prepare themselves and workspace to cook safely in, learning the basic rules to avoid food contamination. • Follow the instructions with the recipe. • Follow a baking recipe from start to finish, including the preparation of ingredients. • Cook safely, including using ovens. • Suggest points for improvement. • Do you know that cooking instructions are known as a recipe. • To understand vitamins, minerals and fibre are important for energy growth and maintaining health. • To no safety rules for using storing and cleaning a knife safely