**Toft Hill Primary School: Design & Technology Long Term Plan**

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| **EYFS** | The EYFS framework does not contain subjects, such as DT, instead we have seven areas of learning and characteristics of effective learning which are the basis of everything we do. The table below outlines the most relevant statements taken from the non-statutory 2021 Development Matters, which guide our curriculum but are non-compulsory and therefore are not designed to be a checklist. The Early Learning Goals are statutory end of year assessment, as shown in the EYFS statutory framework. Many of these skills are prerequisite skills for accessing DT within the national curriculum. The most relevant statements for DT are taken from the following areas of learning:* Physical Development
* Expressive Arts and Design
* Understanding the World
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| **R** | **Transition to Reception** | **Reception** | **ELG** |
| **PSED*** Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.

**Physical Development*** Use large-muscle movements to wave flags and streamers, paint and make marks.
* Choose the right resources to carry out their own plan.
* Use one-handed tools and equipment, for example, making snips in paper with scissors.

**Understanding the World*** Explore how things work.

**Expressive Arts and Design*** Make imaginative and complex ‘small worlds’ with blocks and construction kits, such as a city with different buildings and a park.
* Explore different materials freely, in order to develop their ideas about how to use them and what to make.
* Develop their own ideas and then decide which materials to use to express them.
* Create closed shapes with continuous lines, and begin to use these shapes to represent objects.
 | **Physical Development** * Progress towards a more fluent style of moving, with developing control and grace.
* Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
* Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.

**Expressive Arts and Design*** Explore, use and refine a variety of artistic effects to express their ideas and feelings.
* Return to and build on their previous learning, refining ideas and developing their ability to represent them.
* Create collaboratively, sharing ideas, resources and skills.
 | **Physical Development*** Use a range of small tools, including scissors, paintbrushes and cutlery.

**Expressive Arts and Design** * Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
* Share their creations, explaining the process they have used.
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|  | **Autumn** | **Spring** | **Summer** |
| **1** | **Food: Fruit and vegetables****Focus: Handle and explore fruits and vegetables and learn how to identify which category they fall into. Taste testing to establish chosen ingredients for the smoothie they will design packaging for.****NC**: Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals**Structures: Constructing windmills****Focus: Inspired by the song, ‘Mouse in a windmill’, they will design, decorate and build a windmill for their mouse client to live in, developing an understanding of different types of windmill, how they work and their key features.****NC**: Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error. | **Mechanisms: Moving story book****Focus: Children experiment with sliders before planning and making three pages of a moving story book, based on a familiar story. They will draw the page backgrounds, make the moving parts and assemble it.****NC:** Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products. | **Mechanisms: Wheels and axles****Focus: Learn about the main components of a wheeled vehicle. Develop understanding of how wheels, axles and axle holders work; problem-solve why wheels won't rotate; to design and build their own vehicle designs.****NC:** Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products.**Textiles: Puppets****Focus: Explore different ways of joining fabrics before creating their own hand puppets based upon characters from a well-known fairy tale. They will develop their technical skills of cutting, gluing, stapling and pinning.****NC**: Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique. |
| **2** | **Structures: Baby Bear’s chair****Focus: Using the tale of Goldilocks and the Three Bears, they will help Baby Bear by making him a brand-new chair. When designing the chair, they will consider his needs and what he likes, exploring ways of building, so that it is a strong and stable structure.****NC**: Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error.**Textiles: Pouches****Focus: Introduction to sewing. Pupils make their own template, accurately cut their fabric and sew a basic running stitch.****NC:** Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique. | **Mechanisms: Moving monsters****Focus: After learning the terms; pivot, lever and linkage, they will design a monster that will move using a linkage mechanism. After making linkages of different types and varying the materials they use, children can bring their monsters to life with movement.****NC**: Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products. | **Mechanisms: Fairground wheel****Focus: Designing and creating their own Ferris wheels, they will consider how their wheels rotate and their structures stand freely. Children select appropriate materials and develop their cutting and joining skills to create a final product.****NC**: Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products.**Food: A balanced diet****Focus: Explore and learn what forms a balanced diet, pupils will taste test ingredient combinations from different food groups that will inform a wrap design of their choice which will include a healthy mix of protein, vegetables and dairy.****NC:** Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals |
| **3** | **Textiles: Cushions****Focus: Learning new skills of cross-stitch and appliqué, they will apply their knowledge to the design, decoration and assembly of their own cushion.****NC**: Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their: ● Strength● Appropriate use ● Design**Digital world: Electronic charm****Focus: Design, code, make and promote a Micro:bit electronic charm to use in low-light conditions, developing their understanding of programming to monitor and control products to solve a design scenario.****NC:** Learn how to develop an electronic product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how the history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today. | **Structures: Constructing a castle** **Focus: Learn about the features of a castle, designing and making one of their own. They will use handmade nets and recycled materials to make towers and turrets and construct a base to secure them to.****NC**: Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures. | **Food: Eating seasonally****Focus: Discovering when and where fruits and vegetables are grown, they will learn about seasonality in the UK and the relationship between the colour of fruits and vegetables and their health benefits, before making three dishes using seasonal ingredients.****NC**: Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced.**Mechanical systems: Pneumatic toys****Focus: Design and create a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts. Pupil are introduced to thumbnail sketches and exploded diagrams.****NC:** Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers. |
| **4** | **Mechanical systems: Making a slingshot car****Focus: Transforming lollipop sticks, wheels, dowels and straws into a moving car, as well as making a launch mechanism. They will design and make the body of the vehicle using nets, assembling these to the chassis.****NC:** Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers.**Textiles: Fastenings****Focus: Building upon their sewing skills from previous years, pupils design and create a book sleeve; exploring a variety of fastenings and selecting the most appropriate for their design based on strength and appropriate-use.****NC:** Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their: ● Strength● Appropriate use● Design | **Structures: Pavilions****Focus: Exploring pavilion structures, what they are used for and how to create strong and stable structures, they will design and create their own pavilion, complete with cladding.****NC**: Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures. | **Food: Adapting a recipe****Focus: Work in groups to adapt a simple biscuit recipe, to create the tastiest biscuit ensuring that their creation comes within the given budget of overheads and costs of ingredients.****NC:** Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced.**Electrical systems: Torches****Focus: Create a torch made from easily available materials and objects. They will design and evaluate their product against set design criteria.****NC**: Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can:● Protect the circuitry● Reflect light● Conduct electricity● Insulate |
| **5** | **Mechanical systems: Making a pop-up book****Focus: Choosing a story or nursery rhyme, they will create a four-page pop-up storybook design with accompanying captions, a range of mechanisms and decorative features, including: structures, levers, sliders, layers and spacers.****NC**: Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers. | **Electrical systems: Doodlers****Focus: Explore series circuits further and introduce motors. Explore how the design cycle can be approached at a different starting point, by investigating an existing product, which uses a motor, to encourage pupils to problem-solve and work out how the product has been constructed, ready to develop their own.****NC**: Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can: ● Protect the circuitry● Reflect light● Conduct electricity● Insulate**Structures: Bridges****Focus: After learning about various types of bridges and exploring how the strength of structures can be affected by the shapes used, create their own bridge and test its durability - using woodworking tools and techniques.****NC:** Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures. | **Digital world: Monitoring devices****Focus: Program a Micro: bit animal monitoring device that will alert the owner when the temperature is not optimal. Develop 3D CAD skills by learning how to navigate the Tinkercad interface and essential tools.****NC:** Learn how to develop an electronic product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how the history and evolution of product design led to the on-going Digital revolution and the impact it is having in the world today.**Food: What could be healthier?****Focus: Research and modify a Bolognese sauce recipe to make it healthier. They will cook their versions, make appropriate packaging and take account of ethical considerations of farming cattle.****NC**: Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced. |
| **6** | **Structures: Playgrounds****Focus: Design and create a model of a playground featuring five apparatus, made from three different structures. They will create a footprint as the base, visualising objects in plan-view and getting creative with their use of natural features and cladding for their structures.****NC**: Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures.**Mechanical systems: Automata toys****Focus: Use woodworking skills, pupils construct an automata; measuring and cutting their materials, assembling the frame, choosing cams and designing the characters that sit on the followers to form an interactive shop display.****NC:** Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers. | **Electrical systems: Steady hand games****Focus: Design and create a steady hand game, using nets to create their bases and their knowledge of electrical circuits to build a circuit with a buzzer which closes when the handle makes contact with the wire frame.****NC**: Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can: ● Protect the circuitry● Reflect light● Conduct electricity● Insulate | **Digital world: Navigating the world****Focus: Program a navigation tool to produce a multifunctional device for trekkers. Combine 3D virtual objects to form a complete product concept in 3D computer-aided design modelling software.****NC:** Learn how to develop an electronic product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how the history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today.**Food: Come dine with me****Focus: Research and prepare a three-course meal and taste-test and score their food. Research the journey of their main ingredient from ‘farm to fork’ or write a favourite recipe.****NC:** Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced. |