 Vine Tree Primary Long-Term Plan for Design and Technology 

At Vine Tree Primary School, we offer children the chance to use creative thinking and design within a defined purpose and tangible outcome. Through a variety of creative and practical activities, pupils are taught the knowledge, understanding and skills needed to engage in a process of designing and making. They work in a range of contexts often linked to a humanities topic and encourage cross curricular links to be made.

Through the study of DT pupils acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

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| Year 1 | StructuresUnit – Constructing a windmillChildren will be inspired by the song, ‘Mouse in a windmill’, design and construct a windmill for a client (mouse) to live in. Explore various types of windmill, how they work and their key features. | Mechanisms Unit- Making a moving storybookChildren will explore slider mechanisms and the movement they output, to design, make and evaluate a moving storybook from a range of templates. | Cooking and Nutrition Unit – Fruit and VegetablesChildren will learn to distinguish between fruit and vegetables and where they grow. Design a fruit and vegetable smoothie and accompanying packaging. | TextilesUnit – PuppetsChildren will Explore methods of joining fabric. Design and make a character-based hand puppet using a preferred joining technique, before decorating. |  |
| Year 2 | StructuresUnit – Baby Bear’s ChairChildren will explore stability and methods to strengthen structures, to understand Baby Bear’s chair weaknesses and develop an improved solution for him to use. | Mechanisms Unit- Making a moving SantaChildren will explore levers, linkages and pivots through existing products and experimentation, use this research to construct and assemble a moving monster. | Cooking and Nutrition Unit – A balanced dietChildren will learn about the food groups (carbohydrates, proteins, fruits and vegetables, dairy, oils and spreads) to understand a balanced diet to develop a healthy wrap. | TextilesUnit – PouchesChildren will learn how to sew a running stitch ready to design, make and decorate a pouch using a template. |
| Year 3 | StructuresUnit – Constructing a castleChildren will identify and learn about the key features of a castle, before designing and making a recycled-material castle (structure). | Mechanisms Unit- Pneumatic toysChildren will explore pneumatic systems, then apply this understanding to design and make a pneumatic toy including thumbnail sketches and exploded diagrams. | Cooking and Nutrition Unit – Eating SeasonallyChildren will learn about various fruits and vegetables, and when, where and why they are grown in different seasons. Discover the relationship between colour and health benefits. | TextilesUnit – Cross stitch and appliqueChildren will learn and apply two new sewing techniques – cross-stitch and appliqué. They will utilise these new skills to design and make a cushion. | .  | Electrical systemsUnit – TorchesChildren will identify the difference between electrical and electronic products. Evaluate a range of existing torches and their features, then develop a new functional torch design |
| Year 4 | StructuresUnit – Pavillions Children will investigate and model frame structures to improve their stability, then apply this research to design and create a stable, decorated pavilion. | Mechanisms Unit- Making a slingshot carChildren will use a range of materials, design and make a car with a working slingshot mechanism and house the mechanism using a range of nets. | Cooking and Nutrition Unit – Adapting a recipeChildren will work in groups to adapt an existing biscuit recipe, whilst taking into account the cost of the ingredients and other expenses against a set budget. | TextilesUnit – Fastenings Children will analyse and evaluate a range of existing fastenings, then devise a list of design criteria to design, generate templates and make a fabric book sleeve. | Digital WorldUnit – Electronic CharmChildren will design, develop a program, house and promote a Micro:bit electronic charm to use in low-light conditions. |  |
| Year 5 | StructuresUnit –BridgesChildren will test and analyse various types of bridge to determine their strength and stability. Explore material properties and sources, before marking, sawing and assembling a wooden truss bridge. | Mechanisms Unit- Pop up bookChildren will create a functional four-page pop-up storybook design, using lever, sliders, layers and spacers to create paper-based mechanisms. | Cooking and Nutrition Unit – What could be healthier?Children will discover the farm to fork process, understand the key welfare issues for rearing cattle. Compare the nutritional value of existing sauces and develop a healthier recipe. | . | Digital WorldUnit – Monitoring devicesChildren will apply computing knowledge and understanding to program a Micro: bit animal monitoring device. Develop 3D CAD skills by learning how to navigate the Tinkercad interface and essential tools to combine multiple objects | Electrical systems Unit – Light up cardChildren will learn about the development of exchanging personal messages, to the invention of the Penny Black stamp. Develop an electronic greeting card, using paper-applicable circuit components. |
| Year 6 | StructuresUnit –PlaygroundsChildren will research existing playground equipment and their different forms, before designing and developing a range of apparatus to meet a list of specified design criteria. | Mechanisms Unit- Automata toysChildren will develop a functional automata window display, to meet the requirements in a design brief. Explore and create cam, follower and axle mechanisms to mimic different movements. | Cooking and Nutrition Unit – Come dine with meChildren will develop a three-course menu focused on three key ingredients, as part of a paired challenge to develop the best class recipes. Explore each key ingredient’s farm to fork process. |  | Digital WorldUnit – Navigating the worldChildren will design and program a navigation tool to produce a multifunctional device for trekkers using CAD 3D modelling software. Pitch and explain the product to a guest panel. | Electrical systemsUnit – Steady hand gameChildren will understand what is meant by fit for purpose design and form follows function. Design and develop a steady hand game using a series circuit, including housing and backboard. |

**Design and Technology Curriculum – 3 I’s**

**Intent**

At Vine Tree Primary School, we aim for all children to think innovatively, to question and explore the practical world around them and to develop a positive and passionate approach to their learning**.** We encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others’ needs, wants and values. During Design and Technology, we teach children the language skills they will need to be effective communicators. We actively encourage our children to be critical thinkers, forward planners and effective problem solvers. We also teach our children to be able to work as capable individuals and as part of a valuable, productive team. Resilience is a key theme running through our DT curriculum, and the children are encouraged to become innovators and risk takers.

**Implementation**

Our curriculum enables pupils to take part in a wide range of practical activities directly concerned with:

* identifying needs
* generating ideas
* planning and designing
* making and testing
* evaluating and reflecting

We offer a well sequenced and progressive curriculum map, containing the key concepts children need to be procedurally fluent in, to work and think like professional design technologists.

Our children learn to produce practical solutions to real problems. Children develop technical understanding and making skills, learn about design methods and investigate their environment and the materials around them.

We use a variety of teaching and learning styles in design technology lessons. The principal aim is to develop children’s knowledge, skills and understanding in design and technology. Teachers encourage children to use their knowledge and understanding when developing ideas, planning and making products and evaluating them.

Children are encouraged to listen to the ideas of others, and treat them with respect, to critically evaluate existing products, both their own work and those of others. They have the opportunity to use a wide range of materials and resources, including ICT.

**Impact**

## The monitoring of the standards of children’s work and of the quality of teaching in design and technology is the responsibility of the design and technology subject leader. In each class, samples of work are photographed or collected to build a portfolio of work in design and technology.

We measure the impact of our design and technology curriculum through:

* Evidence in floor books
* Formative assessment
* End of unit assessments
* Data entered onto school tracking system, shared with SLT
* Pupil interviews about their learning
* Staff audits