Stalyhill Junior School

Curriculum Intent Statement

Subject: Design and Technology

Design and Technology Statement of Intent		
At Stalyhill Junior School, it is our intent for design technology to provide children with the opportunity to develop as creative thinkers and problem solvers, both individually and as part of a team. Through a variety of creative and practical activities, pupils are taught the knowledge, understanding and skills needed to respond to a design brief using the process of researching, designing, testing and evaluating their ideas and products. They apply their learning from a range of curriculum areas such as mathematics, science, engineering, computing and art into the context of design technology. We strive for opportunities where pupils are encouraged to take risks, become resourceful, innovative and enterprising by finding solutions to real life problems and identifying needs from a social and environmental perspective. Through the evaluation of past and present design technology, they develop an understanding of aesthetic, as well as functionality and industrial methods. They develop a critical understanding of design and technology's impact on daily life and the wider world.		
Year 3		
Unit 1 – Mechanical systems – pneumatics (Moving Monsters Toy) This exciting unit of work teaches the children how the mechanical system of pneumatics works. They will begin by investigating familiar objects which use pneumatics and learn the history behind the	**Unit 2 – Textiles – 2D shape to 3D shape (Overstitch)** In this textiles unit, the children will first explore felt's properties and a range of felt products with different fastenings. They will learn about the invention of Velcro and what makes it so unique	**Unit 3 – Food technology – Bread making (Healthy and varied diet)** Our food technology unit begins with the children tasting and selecting lots of delicious ingredients for the purpose of investigating and evaluating a range of bread products. They then find out how

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invention of the bicycle pump and John Boyd Dunlop's pneumatic tyre invention. Their focused task will be to deconstruct and reassemble some pneumatic systems and explain how they work. Then the fun begins, with the children designing a moving monster with a pneumatic system to open and close its mouth. Lots of consideration will go into its appearance and, once complete, the children will evaluate how effective it is. **Endpoint: Children design, plan, make and evaluate their pneumatic moving monster.**	and important. Then for the focused task they will deconstruct a felt decoration and understand how it was started as a 2D drawing and became a 3D product using a pattern, material, seams and simple stitching. They will also practise their running stitch and over stitch. The next stage is to design their own Easter/Spring decoration and explore a range of materials and threads to use. **Endpoint - Children design, plan, make and evaluate their Easter decoration.**	a variety of ingredients used in bread are grown and harvested, reared, caught and processed. Our focused task is a shared task to research, follow and make a basic bread recipe. They will practise food preparation, kneading, plaiting/shaping, how to select and use a range of utensils hygienically and cooking techniques. The importance of Joseph Lee's invention of the bread maker will also be researched. In the design process, they will create the design criteria needed, thinking about the purpose *('Subway' style event for parents)*. Using their previous research, they develop their recipe with their added ingredients of choice. The children will learn how important it is to plan the main stages of making their bread and why. **Endpoint – Children design, follow plan and make bread to serve sandwiches at a Subway event.**
Year 4		
Unit 1 – Mechanical systems – levers and linkages (Greeting card or Topic themed book) The children's imagination can run wild in this unit! First, they investigate, analyse and evaluate children's books using levers and linkage mechanisms. In the focused task, they explore how to make a range of lever and linkage	**Unit 2 – Electrical systems – simple programming and control (Willow lanterns)** This unit is linked with the electricity science topic. Children begin by investigating and disassembling some battery-powered lights and circuits. They will think about its purpose and effectiveness as a light.	**Unit 3 – Food Technology - Tropical Dips and Dippers Food (Healthy, varied diet)** In their food technology unit, the children will be learning how a dip can be a healthy snack if it contains food from a mixture of groups. They will learn what the 'eat well plate' is and sort different

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mechanisms and learn lots of new technical vocabulary such as fixed pivots and loose pivots. Time is spent on teaching and practising the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques in this unit. The children write the design criteria for making a greetings card /book and decide who it's for and why. They also consider the safety aspects of it linked to the recipient. In the design stage, they experiment with lots of creative ideas and consider what illustration is best suited to the moving lever mechanism. Children plan the main stages in making their card/book in a step by step guide. After this, they make their product, illustrate the background scene, add a moving lever mechanism and any cut out features. **Endpoint – Children will design, plan, make and evaluate their card/book against the design brief and design criteria.**	They learn how the first light bulb was invented by Thomas Edison and discuss what affect this had on people's lives. Their focused task is to make and fix manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Next, the children investigate switches and make a variety of them using simple classroom materials. Then, the children test their switches in a simple series circuit. The children will create a design brief for making a battery-powered lantern and know the purpose of it. They will choose from a variety of construction materials and plan how the electrical circuit will be fitted into the lantern. In the design process, they will sketch their ideas then plan and make it. **Endpoint – Children will design, plan, make and evaluate the successes and areas of improvement for their completed lantern.**	foods into the key food groups. They will consider if they have a healthy diet and a range of foods that make up a healthy diet. They'll enjoy evaluating a range of bought dips and record their opinions on appearance, smell, taste and texture, and learn what ingredients are in a dip. For the focused task, the class will collectively make a healthy dip and be shown the correct way to use a kitchen knife and other equipment. Next they will write a design brief to celebrate foods from Tropical biomes by creating a healthy dip for themselves to eat at a school picnic. The children will develop their ideas using discussion, annotated sketches and internet research. Finally, they will make their healthy dip. **Endpoint Children will design, plan, make and evaluate their healthy dip against the design brief and design criteria.**
Year 5		
Unit 1 – Textiles: Combining different shapes (Running, blanket & straight stitch) In their textile unit, the children investigate, analyse and evaluate a range of bags which	**Unit 2 – Food Technology - Soup (Celebrating culture and seasonality)** We begin this food technology unit by introducing the children to the '*Big Soup Share*', an event	**Unit 3 – Mechanical Systems: pulleys or gears** This unit links to the classes in-depth study in topic of the Industrial Revolution. They will investigate, analyse and evaluate pre-made toys that

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have been produced by combining fabric shapes. In their focused task, they will learn how a pattern is made, practise construction techniques such as stitching right sides together and learn how to add colour, pattern and texture to the fabric. They will develop skills of threading needles and joining textiles using a range of stitches, such as the French knot, stem and blanket stitch. The children will look at the way a variety of fastenings work e.g. Velcro, zips, press studs, drawstrings, buckles, buttons etc. They then create a meaningful design brief and a simple design specification for their bag inspired by a festive celebration. The design will include detailed plans and annotated sketches of their bag. Using the skills taught in the focused tasks, the children will make their bag to a high quality. **Endpoint – Children will critically evaluate their bag by comparing it to the original design specification, the quality of the design, the manufacture, functionality, innovation shown and purposefulness**	which raises money for the charity 'Shelter' by creating and selling a range of healthy vegetable soups which celebrate food from around the U.K. This will be the basis for their own design brief. In their focused tasks, the children carry out sensory evaluations of a variety of soups, learn about seasonal foods and where in the U.K key vegetables used come from. The class will participate in a soup-making demonstration learning different cooking techniques such as using a hob vs. a slow cooker. Children will also find out about the French chef Alexis Soyer (who invented the Soyer Stove used during The Crimea War). The children work in a group of 6 to create their design brief linked to the purpose of creating a soup to be sold in school to raise money for Shelter. Finally, the children will create their own soup recipe. **Endpoint – Soup enterprise event.**	incorporate a gear or pulley system. In their focused task, they will make a simple pulley and gear system in models to learn about direction and speed of rotation, and develop their measuring, marking, cutting, shaping and joining skills using a range of equipment. After this, they will develop a design brief to create an innovative Victorian themed toy, such as a carousel. Children will create annotated drawings which indicate the location of the mechanical /electrical components and features for the appearance and finishing techniques of the mechanical toy. Before they make their product, they will produce step-by-step plans and lists of tools, equipment and materials needed. In the making process, the children will apply their knowledge gained in the focused tasks to create quality products. Children should use a range of decorative finishing techniques to ensure a well finished final product that matches the intended user and purpose. **Endpoint – Children will evaluate the final product in use and compare it to the original design specification.**

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Year 6		
Unit 1 – 3D Structures - frame structures (Anderson Shelter) The Year 6 in-depth study of WW2 is enhanced further by this structures project. The pupils will begin by investigating and making annotated drawings of a range of frame structures, such as tents. They will also study the purpose behind the creation of Anderson and Morrison Air Raid Shelters. Research will be carried out on Thomas Farnolls Pritchard (architect of The Iron Bridge on the River Severn which uses a frame structure). In our focused tasks, the children will make simple frames out of construction kit materials, paper straws and newspaper, and strengthened with triangulation features. Then they will make evaluations and comparisons between the constructions. The next step is to learn how to use tools and equipment safely such as junior hacksaws, G-clamps and bench hooks to accurately cut and join wood for the framework. Next, they will begin the design stage focusing on the key design criteria and the purpose of the frame structure, drawing accurate and detailed sketches with notes. During this stage, they will share ideas between each other, evaluate and improve their design.	**Unit 2 – Food Technology- Fairtrade Biscuits (Celebrating culture and seasonality)** Lots of delicious taste testing is involved in this food technology unit where we make fair trade festive biscuits. The children begin by learning what fair trade is before conducting research of existing biscuits and the use of fair trade ingredients. They will learn about the key ingredients needed to make a biscuit and the nutritional value of them. In the focused tasks, the children will learn how to cook food using utensils and equipment safely with good personal hygiene. Then they will learn how to measure out, cut, shape and combine ingredients by joining in with a class demonstration, following a basic recipe to prepare and cook biscuits. Lots of fun will be had as the children practise their piping skills. After this, they will develop a design brief and criteria for their festive biscuits. The planning stage is important for a successful product so the children will record the steps, equipment, utensils and ingredients needed. Finally, the children will make their biscuits following the plan and add decorative features using piped icing sugar. **Endpoint – Children will make the finished biscuits and evaluate the final product against the**	**Unit 3 – Electrical Systems; Monitoring and control (Alarming Vehicles or a Children's Board Game)** In this unit, the children research a range of products that use a computer control program and study which input devices (e.g. switches), and output devices (e.g. bulbs and buzzers) have been used. They will consider who these products have been designed for and for what purpose. To gain an understanding of how they work, the children will use components to control a bulb in a simple circuit. Research of relevant famous inventors, such as John Henry Holmes (the inventor of the light switch), will be carried out. In their focused task, the children will recap the measuring, marking out, cutting and joining skills required to create their electrical products. Time will be spent learning how to work safely with electrical components and practising methods of creating secure electrical connections e.g. using wire strippers. They will explore a range of electrical systems that could be used to control their products, including a simple series circuit where a single output device is controlled. This unit will enhance their learning on the use of crumbles and they will write, modify and test computer control programs that include inputs and outputs, and evaluate their decision making. In the design

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In the making stage, children will have access to a range of materials and equipment to bring their air raid shelter to life. **Endpoint - On completion of the project, the pupils will complete a detailed evaluation to assess their finished frame structure, considering if it met the design brief and design criteria.**	**intended purpose, reflecting on the design specification previously agreed.**	task, the children generate innovative ideas by drawing on research and develop a design specification for their product, carefully considering the purpose and needs of the intended user. They will draw annotated sketches of the product and show where the electrical circuit is located. The exciting stage is to make their electrically controlled product by applying the knowledge, understanding and skills from investigations and focused tasks. They will then create and modify a computer control program to enable the product to work automatically in response to changes in the environment. **Endpoint - Critically evaluate the final product by comparing it to the original design specification and test the system to demonstrate its effectiveness for the intended user and purpose.**