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# Skills Progression: Design and Technology

At Stanburn Primary School we follow the Design and Technology scheme of work from 'Kapow', for our weekly Design and Technology or Art and Design lessons.

Below is an outline of the progression of skills for Design and Technology across the school:

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| | **EYFS - Reception** |
| | At Stanburn Primary School, Design and Technology (D&T) education for Early Years Foundation Stage (EYFS) students is integrated into the 'Expressive Arts and Design' and 'Physical Development' areas of the EYFS framework. This approach emphasizes hands-on, creative activities that encourage young learners to explore, design, and construct using various materials and tools. Our school curriculum includes structured activities such as junk modeling and creating bookmarks, which help develop fine motor skills and introduce basic design concepts. Additionally, cooking and nutrition are incorporated through projects like making a rainbow salad, fostering an understanding of healthy eating and food preparation. These activities align with the EYFS framework's goals of promoting creativity, critical thinking, and problem-solving skills. By engaging in these projects, children learn to select appropriate resources, use tools safely, and express their ideas through design and making processes |
| | *ELG: Fine Motor Skills*<br>- *Use a range of small tools, including scissors, paint brushes and cutlery*<br>*ELG: Speaking*<br>- *Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary*<br>*ELG: Managing self*<br>- *Manage their own basic hygiene and personal needs, including… understanding the importance of healthy food choices.*<br>*ELG: Creating with material*<br>- *Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.*<br>- *Share their creations, explaining the process they have used.*<br>*ELG: The Natural World*<br>- *Explore the natural world around them, making observations and drawing pictures of animals and plants.*<br><br>**Structures: Junk Modelling –** Physical Development<br>**Textiles: Bookmarks** – Physical Development<br>**Cooking and Nutrition: Food Soup** – Communication and Language; Personal, Social and Emotional Development; Physical Development |

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| **Knowledge:** *(National Curriculum Coverage)* | <u>KS1</u><br>*Design*<br>• *design purposeful, functional, appealing products for themselves and other users based on design criteria*<br>• *generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology*<br>*Make*<br>• *select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]*<br>• *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*<br>*Evaluate*<br>• *explore and evaluate a range of existing products*<br>• *evaluate their ideas and products against design criteria*<br><br>*Technical knowledge*<br>• *build structures, exploring how they can be made stronger, stiffer and more stable*<br>• *explore and use mechanisms [for* | | <u>KS2</u><br>*Design*<br>• *use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups*<br>• *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*<br>*Make*<br>• *select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately*<br>• *select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*<br>*Evaluate*<br>• *investigate and analyse a range of existing products*<br>• *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work*<br>• *understand how key events and individuals in design and technology have helped shape the world*<br>*Technical knowledge*<br>• *apply their understanding of how to strengthen, stiffen and reinforce more complex structures*<br>• *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]*<br>• *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]*<br>• *apply their understanding of computing to program, monitor and control their products.* | | | |

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| | *example, levers, sliders, wheels and axles], in their products.* | | | | |
| **Structures** | <u>Constructing a Windmill</u><br>Design<br>- Learning the importance of a clear design criteria.<br>- Including individual preferences and requirements in a design.<br>Make<br>- Making stable structures from card.<br>- Following instructions to cut and assemble the supporting structure of a windmill.<br>- Making functioning turbines and axles which are assembled into a main supporting structure.<br>- Finding the middle of an object.<br>- Puncturing holes.<br>- Adding weight to structures. | | | | <u>Playgrounds</u><br>Design<br>- Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.<br>Make<br>- Building a range of play apparatus structures drawing upon new and prior knowledge of structures.<br>- Measuring, marking and cutting wood to create a range of structures.<br>- Using a range of materials to reinforce and add decoration to structures.<br>Evaluate<br>- Improving a |

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| | - Creating supporting structures.<br>- Cutting evenly and carefully.<br>Evaluate<br>- Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.<br>- Suggest points for improvements. | | | | design plan based on peer evaluation.<br>- Testing and adapting a design to improve it as it is developed.<br>- Identifying what makes a successful structure. |
| **Textiles** | | Pouches<br>Design<br>- Designing a pouch.<br>Make<br>- Selecting and cutting fabrics for sewing.<br>- Decorating a pouch using fabric glue or running stitch.<br>- Threading a needle.<br>- Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.<br>- Neatly pinning and cutting fabric | | Fastenings<br>Design<br>- Writing design criteria for a product, articulating decisions made.<br>- Designing a personalised book sleeve.<br>Make<br>- Making and testing a paper template with accuracy and in keeping with the design criteria.<br>- Measuring, marking and cutting fabric | |

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| | | using a template.<br>Evaluate<br>- Troubleshooting scenarios posed by teacher.<br>- Evaluating the quality of the stitching on others' work.<br>- Discussing as a class, the success of their stitching against the success criteria.<br>- Identifying aspects of their peers' work that they particularly like and why. | | using a paper template.<br>- Selecting a stitch style to join fabric.<br>- Working neatly by sewing small, straight stitches.<br>- Incorporating a fastening to a design.<br>Evaluate<br>- Testing and evaluating an end product against the original design criteria.<br>- Deciding how many of the criteria should be met for the product to be considered successful.<br>- Suggesting modifications for improvement.<br>- Articulating the advantages and disadvantages of different fastening types. | |
| **Mechanisms/Mechanical Systems** | Making a Moving Storybook<br>Design<br>- Explaining how to adapt | Fairground Wheel<br>Design<br>- Conducting simple surveys or discussions to | | Making a Slingshot Car<br>Design<br>- Designing a shape that reduces air resistance. | Making a Pop-up Book<br>Design<br>- Designing a pop-up book which uses a mixture of |

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| | mechanisms, using bridges or guides to control the movement.<br>- Designing a moving story book for a given audience.<br>**Make**<br>- Following a design to create moving models that use levers and sliders.<br>**Evaluate**<br>- Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed.<br>- Reviewing the success of a product by testing it with its intended audience. | gather opinions on what others need or like in a design.<br>- Knowing that a survey is used to find out what people like.<br>- Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria.<br>- Knowing that a design brief helps to decide what to make.<br>- Knowing that design criteria are the steps for making a product successful.<br>- Creating ideas with design criteria in mind.<br>- Referring to specific parts of existing products when generating ideas.<br>- Knowing that the design criteria help when | | - Drawing a net to create a structure from.<br>- Choosing shapes that increase or decrease speed as a result of air resistance.<br>- Personalising a design<br>**Make**<br>- Measuring, marking, cutting and assembling with increasing accuracy.<br>- Making a model based on a chosen design.<br>**Evaluate**<br>- Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. | structures and mechanisms.<br>- Naming each mechanism, input and output accurately.<br>- Storyboarding ideas for a book.<br>**Make**<br>- Following a design brief to make a pop up book, neatly and with focus on accuracy.<br>- Making mechanisms and/or structures using sliders, pivots and folds to produce movement.<br>- Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.<br>**Evaluate**<br>- Evaluating the work of others and receiving feedback on own work.<br>- Suggesting points for improvement. | |

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| | | thinking of ideas.<br>- Using labels to explain parts of a design, label materials, etc.<br>- Using labels to explain parts of a design, label materials, etc.<br>- Knowing that drawings can help explain how something works.<br>- Knowing that a label explains part of a drawing.<br>Make<br>- Choosing materials, ingredients or components from a wider range of materials, ingredients or components.<br>- Explaining their choices based on the properties of materials and components.<br>- Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc. | | | |

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| | | - Following and recalling simple safety instructions.<br>- Knowing that some tools are sharp like scissors and knives.<br>- Choosing known geometric shapes when making.<br>- Beginning to shape objects to improve how they work.<br>- Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere.<br>- Considering balance in their finishing, like evenly spaced decoration<br>Evaluate<br>- Discussing a range of existing products and saying what they like and dislike about them.<br>- Evaluating existing products against design criteria. | | | |

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| | | - Evaluating their ideas and creations against simple design criteria.<br>- Knowing that design criteria help to decide if their product is a success.<br>- Suggesting improvements to their peers' designs and products.<br>- Knowing that improve means to make something better.<br>- Knowing that their suggestions can improve someone else's work. | | | |
| **Digital World** | | | <u>Wearable Technology</u><br>Design<br>- Problem solving by suggesting which features on a Micro:bit might be useful and justifying my ideas.<br>- Drawing and manipulating 2D shapes, using | | <u>Monitoring Devices</u><br>Design<br>- Researching (books, internet) for a particular (user's) animal's needs.<br>- Developing design criteria based on research.<br>- Generating multiple housing ideas using |

| | | | computer-aided design, to produce a point of sale badge. | | building bricks. | |
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| | | | - Developing design ideas through annotated sketches to create a product concept. | | - Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. | |
| | | | - Developing design criteria to respond to a design brief. | | - Placing and manoeuvring 3D objects, using CAD. | |
| | | | **Make** | | - Changing the properties of, or combining one or more 3D objects, using CAD. | |
| | | | - Following a list of design requirements. | | **Make** | |
| | | | - Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. | | - Understanding the functional and aesthetic properties of plastics. | |
| | | | **Evaluate** | | - Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range | |
| | | | - Analysing and evaluating wearable technology. | | **Evaluate** | |
| | | | - Using feedback | | - Stating an event or fact from the | |

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| | | | from peers to improve design. | | - last 100 years of plastic history.<br>- Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices.<br>- Explaining key functions in my program (audible alert, visuals).<br>- Explaining how my product would be useful for an animal carer including programmed features. | |
| **Electrical Systems** | | | Electric Poster<br>Design<br>- Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas.<br>- Generate a final design for the electric poster with consideration to the client's needs and design criteria.<br>- Design an electric | | | Steady Hand Game<br>Design<br>- Designing a steady hand game - identifying and naming the components required.<br>- Drawing a design from three different perspectives.<br>- Generating ideas through sketching and discussion.<br>- Modelling ideas |

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| | | | poster that fits the requirements of a given brief.<br>- Plan the positioning of the bulb (circuit component) and its purpose.<br>Make<br>- Create a final design for the electric poster.<br>- Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear.<br>- Measure and mark materials out using a template or ruler.<br>- Fit an electrical component (bulb).<br>- Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).<br>Evaluate<br>- Learning to give and accept constructive criticism on own | | | through prototypes.<br>- Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'.<br>Make<br>- Constructing a stable base for a game.<br>- Accurately cutting, folding and assembling a net.<br>- Decorating the base of the game to a high quality finish.<br>- Making and testing a circuit.<br>- Incorporating a circuit into a base<br>Evaluate<br>- Constructing a stable base for a game.<br>- Accurately cutting, folding and assembling a net.<br>- Decorating the base of the game to a high quality finish. |

|  |  |  | - work and the work of others.<br>- Testing the success of initial ideas against the design criteria and justifying opinions.<br>- Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs. |  |  | - Making and testing a circuit.<br>- Incorporating a circuit into a base |
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| **Knowledge:**<br>*(National Curriculum Coverage)* | KS1<br>• use the basic principles of a healthy and varied diet to prepare dishes.<br>• understand where food comes from. | | KS2<br>• understand and apply the principles of a healthy and varied diet.<br>• prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.<br>• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. | | | |
| **Cooking and Nutrition** | Smoothies<br>Design<br>- Designing smoothie carton packaging by-hand.<br>Make<br>- Chopping fruit and vegetables safely to make a smoothie.<br>- Juicing fruits safely to make a smoothie.<br>Evaluate<br>- Tasting and | Balanced Diet<br>Design<br>- Designing three wrap ideas based on a food combination which work well together.<br>Make<br>- Chopping foods safely to make a wrap.<br>- Constructing a wrap that meets a design brief.<br>- Grating foods to | Eating Seasonally<br>Design<br>- Designing a recipe for a savoury tart.<br>Make<br>- Following the instructions within a recipe. Tasting seasonal ingredients.<br>- Selecting seasonal ingredients.<br>- Peeling ingredients safely.<br>- Cutting safely with a vegetable knife. | Adapting a Recipe<br>Design<br>- Establishing and using design criteria to help test and review dishes.<br>- Describing the benefits of seasonal fruits and vegetables and the impact on the environment.<br>- Suggesting points for improvement when making a | Developing a Recipe<br>Design<br>- Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.<br>- Writing an amended method for a recipe to incorporate the | Come Dine with Me<br>Design<br>- Writing a recipe, explaining the key steps, method and ingredients.<br>- Including facts and drawings from research undertaken.<br>Make<br>- Following a recipe, including |

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| evaluating different food combinations.<br>- Describing appearance, smell and taste.<br>- Suggesting information to be included on packaging.<br>- Comparing their own smoothie with someone else's. | make a wrap.<br>- Snipping smaller foods instead of cutting.<br>Evaluate<br>- Describing the taste, texture and smell of fruit and vegetables.<br>- Taste testing food combinations and final products.<br>- Describing the information that should be included on a label.<br>- Evaluating food by giving a score | Evaluate<br>- Establishing and using design criteria to help test and review dishes.<br>- Describing the benefits of seasonal fruits and vegetables and the impact on the environment.<br>- Suggesting points for improvement when making a seasonal tart. | seasonal tart.<br>Make<br>- Following a baking recipe, including the preparation of ingredients.<br>- Cooking safely, following basic hygiene rules.<br>- Adapting a recipe to meet the requirements of a target audience.<br>- Using a cuboid net to create packaging.<br>Evaluate<br>- Evaluating a recipe, considering: taste, smell, texture and appearance.<br>- Describing the impact of the budget on the selection of ingredients.<br>- Evaluating and comparing a range of food products.<br>- Suggesting modifications to a recipe. | relevant changes to ingredients.<br>- Designing appealing packaging to reflect a recipe.<br>- Researching existing recipes to inform ingredient choices.<br>Make<br>- Cutting and preparing vegetables safely.<br>- Using equipment safely, including knives, hot pans and hobs.<br>- Knowing how to avoid cross-contamination.<br>- Following a step by step method carefully to make a recipe.<br>Evaluate<br>- Identifying the nutritional differences between different products and recipes. | using the correct quantities of each ingredient.<br>- Adapting a recipe based on research.<br>- Working to a given timescale.<br>- Working safely and hygienically with independence<br>Evaluate<br>- Evaluating a recipe, considering: taste, smell, texture and origin of the food group.<br>- Taste testing and scoring final products.<br>- Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, |

| | | | | | - Identifying and describing healthy benefits of food groups. | preparation and cooking process.<br>- Evaluating health and safety in production to minimise cross contamination. |
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