



DESIGN TECHNOLOGY

Design Technology

Curriculum Intent

Design Technology (DT) at Tattershall Primary School aims to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation, and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others. It is our intent for the children to become creative problem-solvers, both as individuals and as part of a team. Through our DT Curriculum, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements. In food technology lessons, pupils will be given the opportunity to prepare food safely and hygienically, cook and understand the importance of nutrition and healthy eating, all of which are important life skills. Our DT Curriculum enables pupils to meet the end of Key Stage Attainment Targets in the National curriculum and the aims also align with those in the National Curriculum.

At Tattershall Primary School we have used the curriculum design model from 'Kapow Primary'. Kapow Primary is an Artsmark partner and the curriculum is able to inspire children and young people to create, experience, and participate in great arts and culture.

Design Technology

Curriculum Implementation

At Tattershall Primary School we have used the curriculum design model from 'Kapow Primary'.

The Design and Technology National Curriculum outlines the three main stages of the design process: design, make and evaluate. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical, and technical understanding required for each strand. Cooking and nutrition has a separate section, with a focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality.



The National Curriculum organises the Design and Technology Attainment Targets under four subheadings: Design, Make, Evaluate, and Technical knowledge. These subheadings are our primary strands:

- Design
- Make
- Evaluate
- Technical knowledge

Our DT Curriculum has a clear progression of skills and knowledge within these strands and key areas across each year group.

Cooking and nutrition is given a particular focus in the National Curriculum and we have made this one of our six key areas that pupils revisit throughout their time in primary school:

- Cooking and nutrition
- Mechanisms/ Mechanical systems
- Structures
- Textiles
- Electrical systems (KS2 only)
- Digital world (KS2 only)

Through our curriculum, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in the six key areas.

Each of our key areas follows the design process (design, make and evaluate) and has a particular theme and focus from the technical knowledge or cooking and nutrition section of the curriculum. Our curriculum is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing pupils to revisit and build on their previous learning. Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks. This variety means that lessons are engaging and appeal to those with a variety of learning styles.

Lessons are adapted to ensure that they can be accessed by all pupils and opportunities to stretch pupils' learning are available when required. Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.

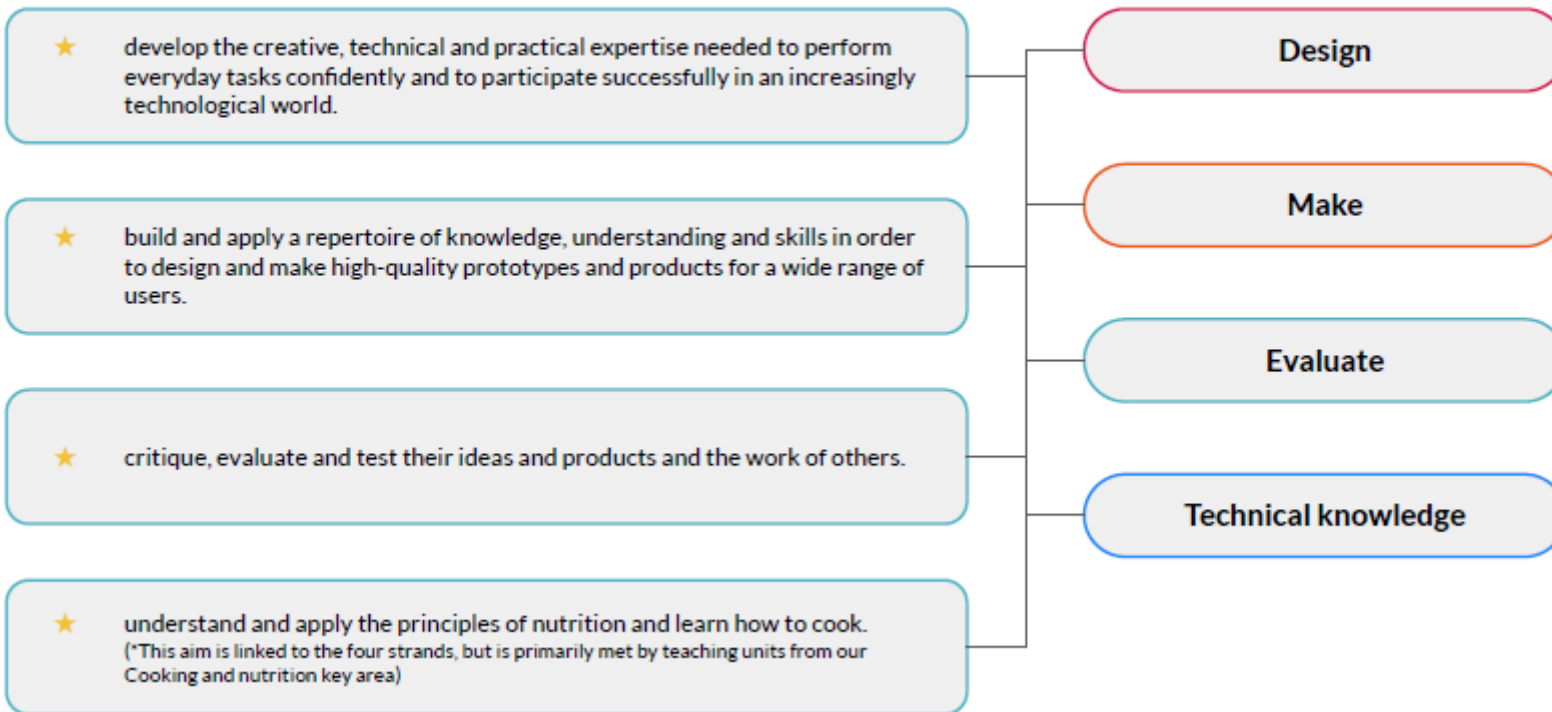
At Tattershall Primary School Design Technology is taught discreetly from Year 1 to Year 6, mostly through a weekly lesson. Due to our PAN of 20, we have single year group classes for Years R, 1, 2 and 6 and two mixed age classes; Year 3/4 and Year 4/5. In order to meet the needs of our school, we have designed a three-year cycle for the mixed age classes. This has been carefully planned and adapted to ensure that all pupils have access to a progressive curriculum.

Design Technology

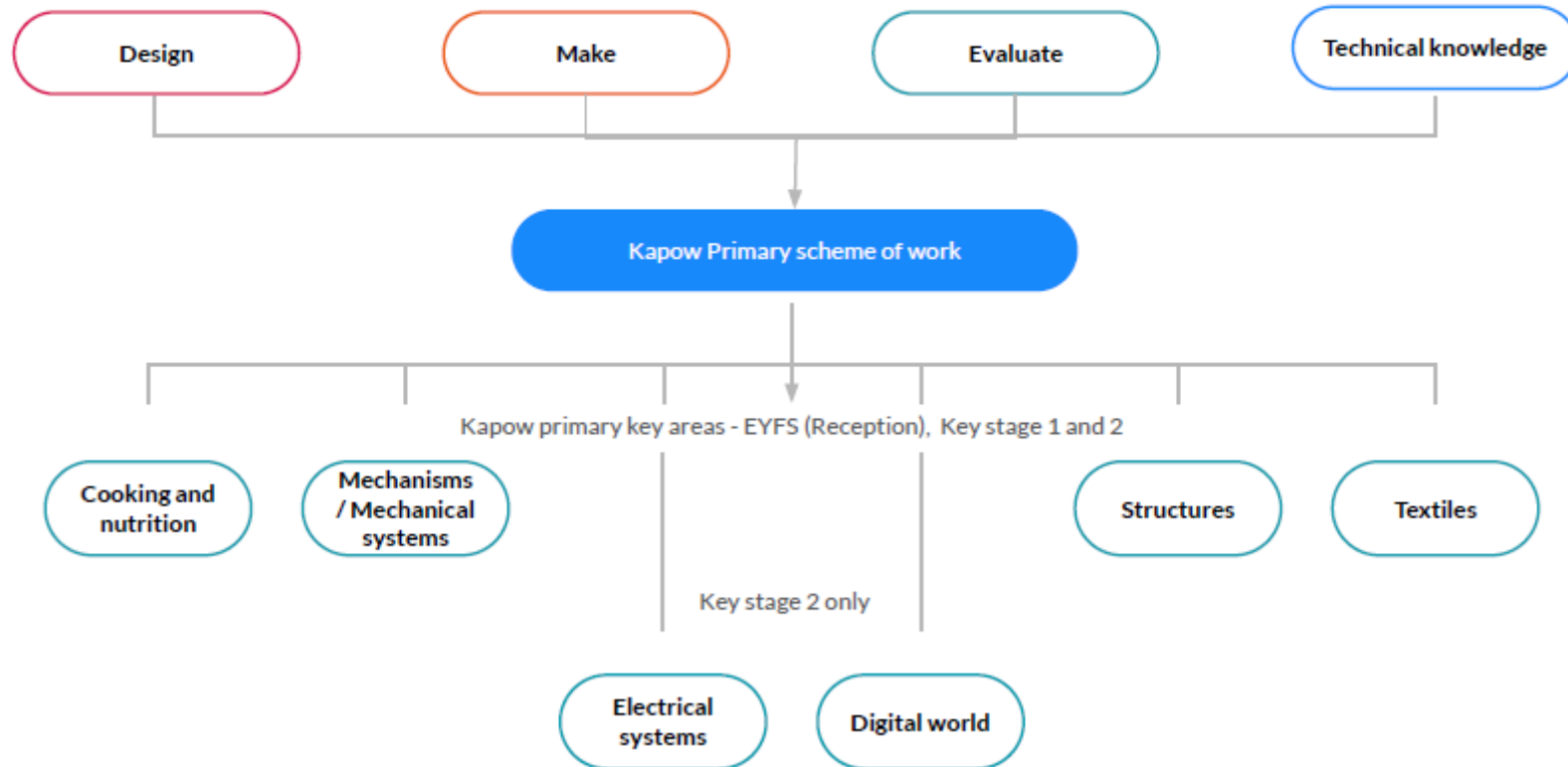
Curriculum Organisation

Our scheme of work fulfils the statutory requirements outlined in the **national curriculum (2014)**. The national curriculum Programme of study for Design and technology aims to ensure that all pupils:

We have identified four key strands which run throughout our scheme of work:

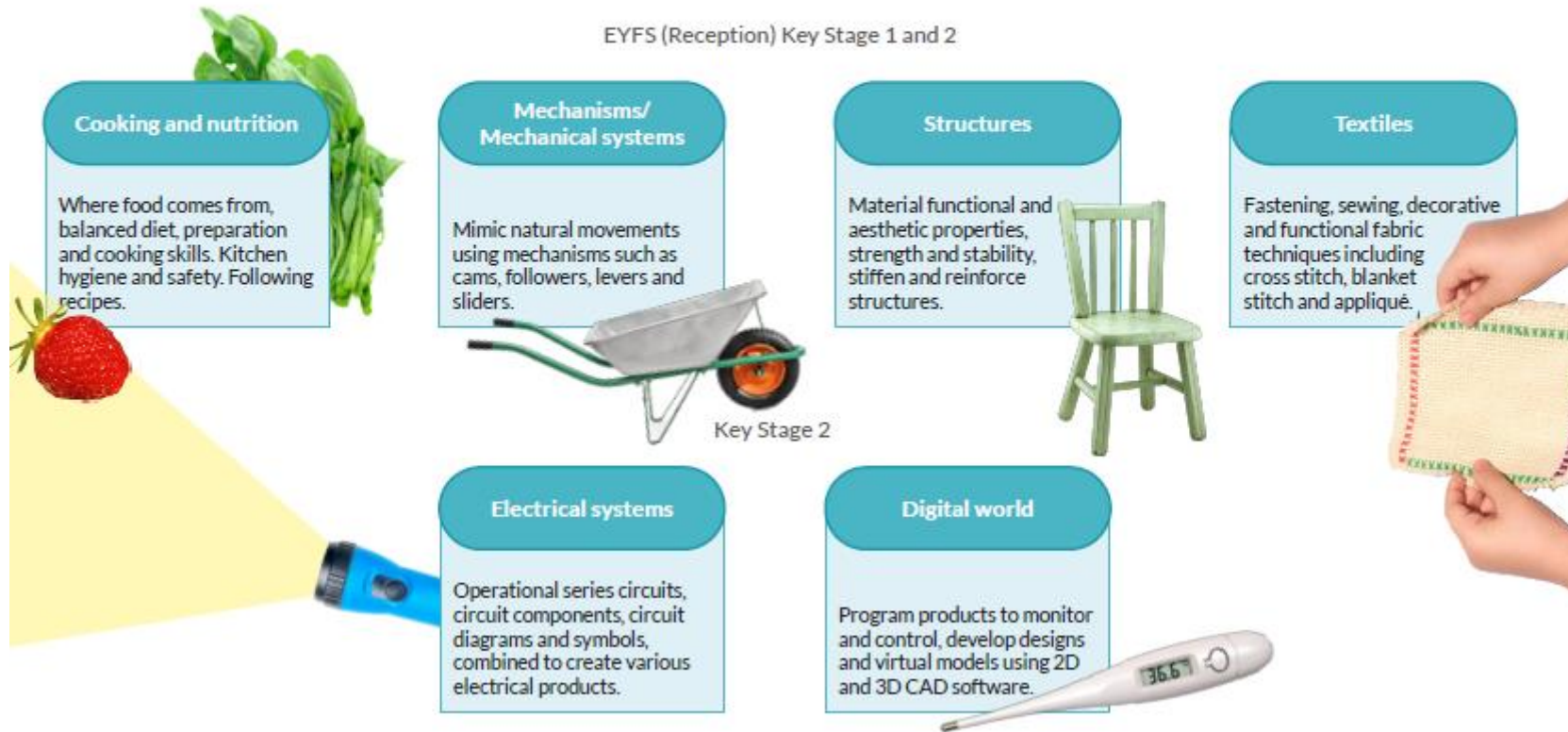


How is the Design and technology scheme of work organised?



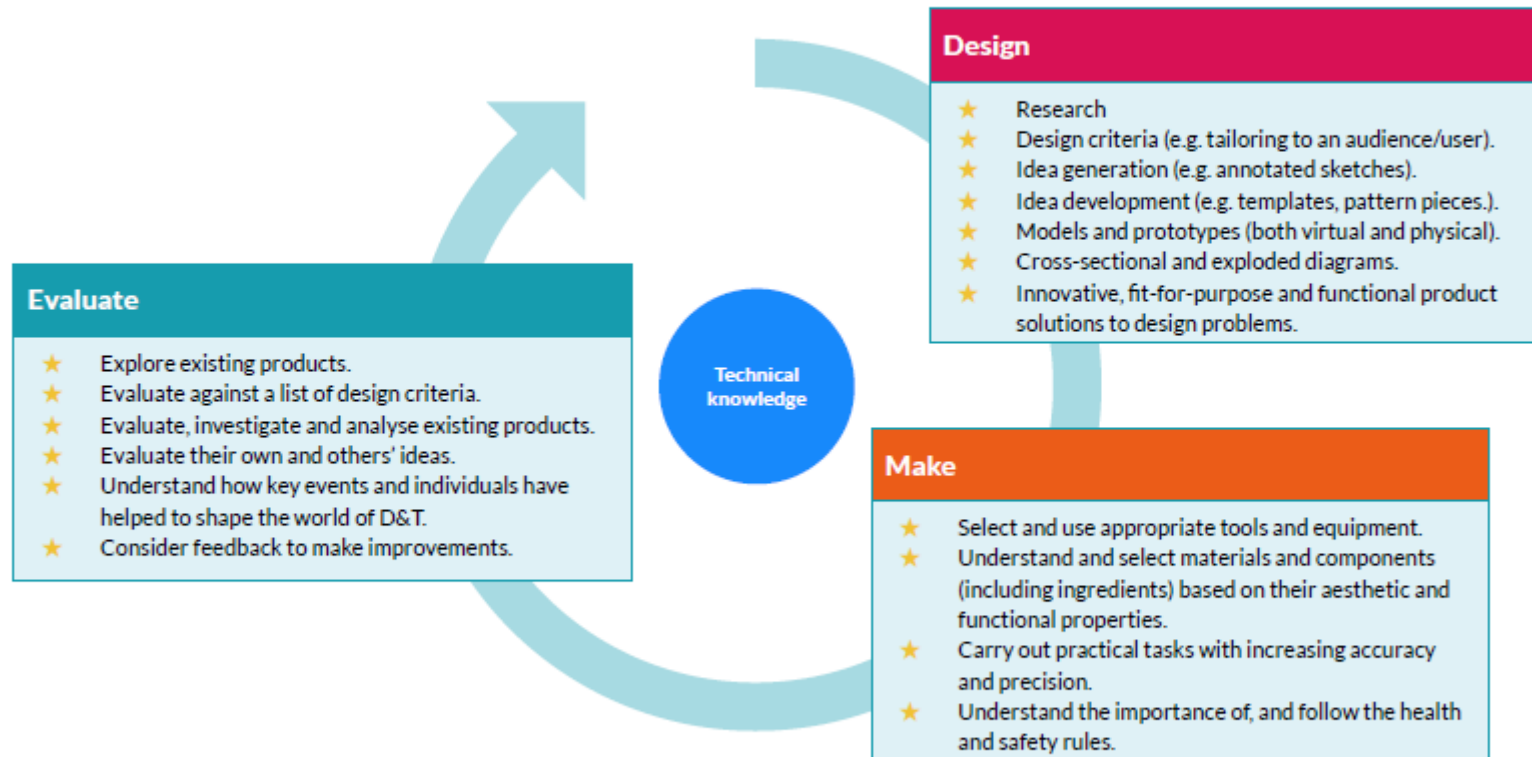
Key areas

The six key areas are revisited each year, with Electrical systems and Digital world beginning in KS2. The areas enable all subject leads, specialists or non-specialists, to understand and make it easy for teachers to see prior and future learning for your pupils. You can see, at a glance, how the unit you are teaching fits into their wider learning journey.



The design process

The Design and technology National Curriculum outlines the three main stages of the design process: design, make and evaluate. Each Kapow Primary unit follows these stages, to form a full project. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical and technical understanding, required for each strand.



Cooking and nutrition* has a separate section in the D&T National Curriculum, with additional focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality. Cooking and nutrition units still follow the design process summarised above, for example by tasking the pupils to develop recipes for a specific set of requirements (design criteria) and to suggest methods of packaging the food product including the nutritional information.

Design Technology

Cycle 1

Long Term Plan

| | Squirrel Class (Year R) | Koala Class (Year 1) | Red Panda Class (Year 2) | Alpaca Class (Year 3/4) | Lion Class (Year 4/5) | Eagle Class (Year 6) |
|------------|----------------------------|--|--|----------------------------|--|--|
| Mechanisms | | <p>‘Making a Moving Story Book’ Experiment with sliders before planning and making three pages of a moving story book, based on a familiar story, drawing the page backgrounds, creating the moving parts and assembling it.</p> <p>‘Wheels and Axles’ 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.</p> | <p>‘Fairground Wheel’ Design and create functional Ferris wheels, consider how the different components fit together so that the wheels rotate and the structure stands freely. Select appropriate materials and develop their cutting and joining skills.</p> <p>‘Making a Moving Monster’ After learning the terms: pivot, lever and linkage, pupils design a monster that will move using a linkage mechanism. Pupils practise making linkages and experiment with various materials to bring their monsters to life.</p> | | <p>‘Pop Up Book’ Create a four-page pop-up story book design, incorporating a range of functional mechanisms that use levers, sliders, layers and spacers to give the illusion of movement through interaction.</p> <p>‘Making a Slingshot Car’ Transform lollipop sticks, wheels, dowel and straws into a moving car. Pupils use a glue gun to construct, make the launch mechanism, design and create the chassis of a vehicle using nets.</p> | <p>‘Automata Toys’ 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.</p> |

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| Structures | | <p>‘Constructing a Windmill’</p> <p>Design, decorate and build a windmill for a mouse (client) to live in, develop an understanding of different types of windmill, how they work and their key features. Look at real existing examples and the functions that they carry out.</p> | <p>‘Baby Bear’s Chair’</p> <p>Using the tale of Goldilocks and the Three Bears as inspiration, pupils help Baby Bear by making him a brand-new chair, exploring different shapes and materials. When designing the chair, they consider his needs and what he likes.</p> | <p>‘Constructing a Castle’</p> <p>Learning about the features of a castle, pupils design and make one of their own. They will also be using configurations of handmade nets and recycled materials to make towers and turrets before constructing a stable base.</p> | | <p>‘Playgrounds’</p> <p>Design and create a model for a new playground featuring five apparatus, made from three different structures. Using a footprint as the base, practise visualising objects in plan view and get creative including natural features.</p> |
| Textiles | | <p>‘Puppets’</p> <p>Explore different ways of joining fabrics before creating hand puppets based upon characters from a well-known fairytale. Develop technical skills of cutting, glueing, stapling and pinning.</p> | <p>‘Pouches’</p> <p>Introduction to sewing. Pupils make their own template, accurately cut their fabric and sew a basic running stitch.</p> | <p>‘Fastenings’</p> <p>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.</p> | | |
| Cooking and Nutrition | | <p>‘Smoothies’</p> <p>Handle and explore fruits and vegetables and learn how to identify fruit, before undertaking taste testing to establish chosen ingredients for a smoothie they will make, with accompanying packaging.</p> | <p>‘Balanced Diet’</p> <p>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.</p> | <p>‘Eating Seasonally’</p> <p>Pupils discover when and where fruits and vegetables are grown and learn about seasonality in the UK. They respond to a design brief to design a seasonal food tart using ingredients harvested in the UK in May and June.</p> | | <p>‘Come Dine With Me’</p> <p>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’ and write a favourite recipe.</p> |

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| Electrical Systems | | | | | <p>‘Doodlers’</p> <p>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.</p> | <p>‘Steady Hand Game’</p> <p>Design and create a steady hand game, use nets to create the bases and apply knowledge of electrical circuits to build an operational circuit with a buzzer that completes the circuit when the handle makes contact with the wire.</p> |
| Digital World | | | | | | <p>‘Navigating the World’</p> <p>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.</p> |

Adaptations for Cycle 2 and 3

| | CYCLE 2 | | CYCLE 3 | |
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| | Alpaca Class (Year 3/4) | Lion Class (Year 4/5) | Alpaca Class (Year 3/4) | Lion Class (Year 4/5) |
| Mechanisms | <p>‘Pneumatic Toys’</p> <p>Design and create a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts. Pupils are introduced to thumbnail sketches and exploded diagrams.</p> | | | |
| Structures | | <p>‘Bridges’</p> <p>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.</p> | | <p>‘Pavillions’</p> <p>Exploring pavilion structures, learning about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding.</p> |
| Textiles | <p>‘Cross-Stitch and Applique: Egyptian Collars’</p> <p>Introduce two new skills to add to the pupils’ repertoire: cross stitch and appliqué. Pupils apply their knowledge to the design, decoration and assembly of their own cushions or Egyptian collars.</p> | | | <p>‘Stuffed Toys’</p> <p>Create a stuffed toy by applying skills learnt in previous units. Introduce blanket stitch.</p> |
| Cooking and Nutrition | | <p>‘Developing a Recipe’</p> <p>Research and modify a traditional Bolognese sauce recipe to improve the nutritional value. Cook improved version and create packaging that fits design criteria. Learn about where beef comes from.</p> | <p>‘Adapting a Recipe’</p> <p>Work in groups to adapt a simple biscuit recipe, to create a biscuit suited to a chosen target audience. They ensure that their creation comes within a given budget of overheads and ingredients.</p> | |

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| Electrical Systems | <p>'Electric Poster'</p> <p>An introduction to information design and electrical systems, pupils create an electric poster using a basic circuit to develop a museum display about The Romans.</p> | | <p>'Torches'</p> <p>Pupils apply their scientific understanding of electrical circuits to create a torch made from recycled and reclaimed materials and objects. They design and evaluate their product against set design criteria.</p> | |
| Digital World | | <p>'Monitoring Devices'</p> <p>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.</p> | <p>'Wearable Technology'</p> <p>Design, code and promote a piece of wearable technology to use in low light conditions, developing their understanding of programming to monitor and control products to solve a design scenario.</p> | <p>'Mindful Moments Timer'</p> <p>Design, program, prototype and brand a Micro:bit timer to a specified amount of minutes. Pupils carry out research and existing product analysis to determine how a programmable product could be personalised to their needs.</p> |

Progression of Knowledge and Skills

Click on the icon below to open our Design Technology Progression of Knowledge and Skills Document



How our School Values are Embedded in Design Technology

HONESTY

FORGIVENESS

KINDNESS

TEAMWORK

RESPECT

| Key Stage One | Lower Key Stage Two | Upper Key Stage Two |
|--|--|--|
| <p style="text-align: center;">Kindness: Sharing equipment with others.</p> <p style="text-align: center;">Respect: Sharing equipment with others. Listening to their peer's evaluations, being careful with other children's creations.</p> <p style="text-align: center;">Teamwork: Working collaboratively on projects and use of resources. Listening to the ideas of others.</p> <p style="text-align: center;">Honesty: Evaluation own and others' work.</p> <p style="text-align: center;">Forgiveness: Forgiving if someone accidentally damages the work of others or takes equipment without asking first.</p> | <p style="text-align: center;">Kindness: Evaluating others' designs with tact and tasting others' cooking.</p> <p style="text-align: center;">Respect: Show respect to the efforts and feelings of their peers when evaluating work and receiving feedback. Look after the school's equipment.</p> <p style="text-align: center;">Teamwork: Working together to an end goal, ensuring collaboration and compromise.</p> <p style="text-align: center;">Honesty: Being honest about our own work and what we could improve upon next time.</p> <p style="text-align: center;">Forgiveness: Understand that people and ourselves make mistakes and to be able to forgive them for these.</p> | <p style="text-align: center;">Kindness: Through comments and compliments to work – understanding that people see artwork / products differently.</p> <p style="text-align: center;">Respect: Respecting that products and creativity means different things to different people and that people have different skills.</p> <p style="text-align: center;">Teamwork: Creating group products and critiquing constructively work.</p> <p style="text-align: center;">Honesty: Being open and honest about skills and abilities but also respectful when talking to others about it.</p> <p style="text-align: center;">Forgiveness: That products and artwork can be emotive and involve a variety of emotions; to respect these and tolerate comments in relation to this.</p> |

ASSESSMENT IN DESIGN TECHNOLOGY

Learning is knowing more and remembering more

We believe that if pupils are successfully learning the key knowledge we intend them to, then they will be able to confidently recall, discuss and make connections between knowledge learnt in previous years, units and lessons. As a result, pupils will build cumulatively ambitious knowledge, embed key concepts, use knowledge fluently and develop their understanding of Design Technology.

Cold and Hot Tasks

Each unit begins with a 'cold task' to help teachers to understand pupils' current knowledge and ability to recall prior learning. The same task is repeated at the end of the unit (a 'hot task') so that teachers can track progress across a unit of work. Pupils are able to reflect on their learning during this process and teachers will identify the strength of pupils' ability to recall the identified key knowledge for that unit.

Formative Assessment

Teachers use formative assessment within and across lessons to be able to feedback to pupils about their learning in Art and Design in the moment. Each lesson includes opportunities to assess pupils against the learning objectives, which are clearly identified and shared each lesson. Planning is adapted to meet the needs of the children based on ongoing teacher assessment and adaptations are designed to ensure pupil progress is maximised.

Learning Reviews – opportunities to retrieve and recall

Each lesson will begin with an element of learning review. This will typically review learning in Art and Design from a previous year, topic and finally the previous lesson. The learning to be reviewed is planned within our curriculum documentation so that all learning is continually reviewed, and this will be based on the identified key knowledge within our Medium Term Plans. Teachers will deliver this review using a range of strategies e.g. quizzes, discussions, brainstorms, 'telling the story' (further detail can be found in our Teaching and Learning Policy). Teachers will use this review to understand how well children know and remember more.

Addressing gaps in knowledge

Our curriculum is designed using a 'spiral' approach, meaning that learning is continuously recapped and built upon across and within years. With the addition of our carefully planned Learning Reviews, opportunities or gaps in knowledge are significantly reduced. However, teachers will use the information gathered from formative assessment approaches (including Learning Reviews) to adapt future learning for the whole class, group or individual as needed.

Design Technology

Curriculum Impact

The impact of our Design Technology curriculum is that pupils should leave Tattershall Primary School equipped with a range of skills to enable them to succeed in their secondary education and be innovative and resourceful members of society.

The expected impact is that children will:

- Understand the functional and aesthetic properties of a range of materials and resources.
- Understand how to use and combine tools to carry out different processes for shaping, decorating, and manufacturing products.
- Build and apply a repertoire of skills, knowledge and understanding to produce high quality, innovative outcomes, including models, prototypes, CAD, and products to fulfil the needs of users, clients, and scenarios.
- Understand and apply the principles of healthy eating, diets, and recipes, including key processes, food groups and cooking equipment.
- Have an appreciation for key individuals, inventions, and events in history and of today that impact our world.
- Recognise where our decisions can impact the wider world in terms of community, social and environmental issues.
- Self-evaluate and reflect on learning at different stages and identify areas to improve.
- Meet the end of key stage expectations outlined in the National curriculum for Design and Technology.
- Meet the end of key stage expectations outlined in the National curriculum for Computing.