

### What are the aims and intentions of this curriculum?

The aim of our Key Stage 3 Curriculum is to provide all children with the skills and knowledge that will prepare them for life beyond secondary education. 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. Design Technology is an inspiring, rigorous and practical subject. It can be found in many of the object's children use each day and is a part of children's immediate experiences. Design Technology encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team and help develop their perseverance and resilience.

Our Design Technology curriculum combines skills, knowledge, concepts and values to enable children to tackle real problems. It can improve analysis, problem solving, and practical capability and evaluation skills. We aim to, wherever possible, link work to other disciplines such as mathematics, science, engineering, ICT and art. The children are encouraged to become innovators and risk-takers.

Highlighted in green are links to PSHE in the curriculum

Highlighted in blue are links to Careers in the curriculum

Term	Topics	Knowledge and key terms	Skills developed	Assessment
<b>Autumn 1</b>	<p>Freehand Sketching and annotation (using ACCESSFM)</p> <p>Introduce pupils to health and safety in the workshop. Go through project booklets, design process and level descriptors.</p> <p>Talk about Design situations and Design Briefs.</p> <p>To demonstrate the safe use of different hand tools and equipment to manufacture their product. (Clock)</p> <p>Explain the differences between safe practice in classroom and industrial environments.</p> <p>Introduction to the Design Challenge. Key skills: Explain the</p>	<p>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.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>To understand the project design brief. To investigate existing products and analyze them using ACCESS FM.</p> <p>To demonstrate creativity in writing a detailed specification.</p> <p>To understand the importance of creating a prototype.</p>	<p>Use the research from the previous lesson to help inform and develop potential ideas for the specification.</p> <p>Write a 5-point specification for their own design.</p> <p>Begin to sketch ideas by hand or on CAD. Colour and annotate.</p> <p>Continue to complete hand drawn version of designs ideas And / Or use Tech Soft 2D templates to help develop ideas.</p> <p>Cut and construct prototypes using the laser cutter or hand tools. Evaluate prototype design. Identify any improvements.</p> <p>Use Tech Soft 2D to complete final design work. Cut designs using either the laser cutter or hand tools. Begin to construction. Write up manufacturing diary.</p>	<p>Students' work will be judged on a variety of success criteria including www/ebi after specifications.</p> <p>Peer Assessment.</p> <p>Summative assessment.</p>

	<p>strengths and weaknesses of Research existing products using ACCESS FM.</p> <p>Using the research create a detailed specification. To use 2D Tech-soft to create a CAD model of their design. Key skills: Create a detailed justified list of features for an idea.</p> <p>Design development through sketches / digital modelling.</p> <p>Develop design work using prototypes.</p> <p>Write an evaluation and reflect on the specification points.</p> <p>.</p>	<p>Using Tech-Soft 2d Design Tools software, demonstrate how to present final design using CAD.</p>	<p>Complete practical work. Complete the evaluation against the specification and peer assess the final piece.</p> <p><b>Online and media</b></p> <p>The impact of viewing harmful content when conducting research.</p> <p><b>Linking curriculum learning to careers</b></p> <p>Students will know that they can become a successful design Engineer through the development of their own designs and analysis and improvement of existing ones.</p> <p>Design Engineers research and develop designs for projects in a range of sectors, from construction to software, medical equipment and manufacturing. They also modify existing products or designs to increase efficiency or improve performance, and manage the process of turning their designs into reality.</p>	
<b>Autumn 2</b>	<p>Manufacturing of the bike light.</p> <p>Selecting appropriate tools, equipment and processes.</p> <p>Accuracy in design and manufacture.</p> <p>To know the different circuit symbols.</p> <p>To be able to build circuits from their circuit diagrams.</p>	<p>Understand and be able to identify the correct tools and equipment for a specific task.</p> <p>Accuracy in design and manufacture.</p> <p>Be aware of the importance of accuracy in manufacture.</p> <p>Understand how to eliminate errors.</p> <p>Be aware of and be able to demonstrate how to plan for accuracy and efficiency.</p>	<p><b>Linking curriculum learning to careers</b></p> <p>Biking is very</p> <ul style="list-style-type: none"> <li>• A given situation/design brief and how to research and analyse relevant information</li> <li>• Producing a design specification</li> <li>• How to generate initial ideas and develop these to produce a final design</li> <li>• Electronic Communication Technology</li> <li>• Using appropriate tools, equipment and processes correctly and accurately in making a quality product</li> <li>• How to evaluate the final product</li> </ul>	<p>Students' work will be judged on a variety of success criteria including www/ebi after specifications.</p> <p>Peer Assessment.</p> <p>Summative assessment</p>

			<p><b>Basic first aid and Health and Prevention</b></p> <p>Student will understand the basic procedure if they sustain cuts and burns from tools and soldering iron.</p> <p>They will carry out risk assessment and teacher will demonstrate the use of all tools, equipment and machines. Students will also know the procedure to be taken in the event of accidents. All students will be thoroughly assessed and given a certificate before they are allowed to use the machines.</p>	
<b>Spring 1</b>	<p>Interpret the situation and design brief.</p> <p>Explain the problem and make suggestions of how you would solve the design problem.</p> <p>Analyse the task by brainstorming the key factors related to designing and making a <b>(storage box)</b> product.</p> <p>Demonstrate understanding of advanced techniques used to make their storage box.</p> <p>Explore the resistant material that will be used in order to discuss the materials used, their characteristics and the techniques that would be appropriate to work them safely.</p> <p>Develop ideas through detail sketches using colours and annotations.</p>	<p>Build and apply a repertoire of knowledge, understanding and skills in order to design and make high quality prototypes and products for a wide range of users.</p> <p>Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and participate successfully increasingly in a technological world.</p> <p>Research existing products using ACCESS FM.</p> <p>Specification – Pupils will learn what a specification is, why they are useful, what they are used for and then create an individual spec for their clock.</p> <p>Design ideas – pupils are to create 3 initial design ideas and then compare them to their specification. They will also work with peers to improve their final design outcomes.</p> <p>Final design – pupils will have to complete their final design drawing and make sure that their developed final design meets their specification as closely as possible.</p>	<p>Learners are given real life scenarios as design or engineering problems to solve.</p> <p>Cultural diversity and British values are included in the curriculum for enrichment and depth.</p> <p>Projects and assignment briefs require learners to be creative and innovative in solving problems.</p> <p>Diversity, tolerance and individuality is celebrated and embraced through an inclusive environment and ethos within the school.</p> <p>Equipment will be demonstrated and supervised at all times.</p> <p><b>Understand and respectful relationships, including friendships.</b></p> <p>Students will know the characteristics of positive and healthy friendships in all contexts including online. They will respect each other when working in groups and doing peer assessments. Students will show solidarity, honesty, generosity and respect to other cultures when doing their designs.</p>	<p>Students' work will be judged on a variety of success criteria including <a href="http://www/ebi">www/ebi</a> after specifications.</p> <p>Peer Assessment.</p> <p>Teacher assessment</p>

	<p>Manufacture of design using the hand tools and equipment.</p> <p>Write an evaluation and reflect on the specification points.</p>	<p>Students will learn how to produce a good quality development section which tells the teacher how and why changes have been made on their designs.</p> <p>Practical CAD Work – pupils will use 2D design to create their final design using CAD software.</p> <p>Pupils will then manufacture the storage box. (e.g. Painting/colouring, adding fixtures).</p> <p>End of Project self-evaluation and peer evaluation. Pupils will also give themselves an overall level for their practical work and update their CAD Skills sheet.</p>	<p>They will not discriminate against others and always respect others' boundaries and decisions.</p> <p><b>Linking curriculum learning to careers</b></p> <p>Students will understand the use of different resistant material and how these are used in the carpentry industry. Students will understand that the skills develop in this model are important and could be used in the future as a carpenter's apprentice. Carpenters are in constant demand in the UK, whether working on construction sites or building bespoke items in a workshop. If you're interested in going self-employed and want to combine this with an existing interest or skills in carpentry, a career as a carpenter can be a great way to go it alone.</p>	
<p><b>Spring 2</b></p>	<p>Introduction to the night light and its components.</p> <p>Pupils will learn about how electricity works and the role it plays in everyday products.</p> <p>Pupils will learn about the advantages and disadvantages of a range of ways of generating electricity.</p> <p>Pupils will use ACCESSFM to analyze existing product and use their research to generate some initial concepts.</p> <p>Pupils will then profile their intended user and their needs and wants.</p>	<p>Explain and discuss the concept of the specification in the design process. Pupils will develop a specification for the project using the 'Developing a Specification' sheet.</p> <p>Students should understand the health and safety considerations when using tools and equipment.</p> <p>Discuss the importance of investigation/research in the design process. Pupils to record their results using the 'Investigation/Research' sheet.</p> <p>Analyze existing products using ACCESS FM.</p> <p>Explain what research means for their product.</p>	<p>Interpreting 'The Design Brief' sheet. Discuss the design situation and give an example of the brief pupils could use. Pupils will present a Situation and Design Brief for the project in their booklets.</p> <p>Students will be able to use tools and equipment safely.</p> <p>They will be able to demonstrate the effective use of soldering.</p> <p>Students will know the use of each electrical component used to make their circuit.</p> <p>Students will enhance their sketching and AutoCAD skills.</p> <p>Effectively develop prototype from sketches and drawings.</p>	<p>Students' work will be judged on a variety of success criteria including <a href="http://www/ebi">www/ebi</a> after specifications.</p> <p>Peer Assessment.</p> <p>Teacher assessment</p>

	<p>Pupils will sketch out some initial ideas based on their research.</p> <p>Pupils will generate a design brief and specification based on their own research. This will narrow down their ideas.</p> <p>Pupils will design more refined ideas using their brief and specification.</p> <p>Pupils learn about circuits and the role different components play in creating functioning products. Pupils will mark out and cut their night light housing.</p> <p>Pupils will solder their circuits together safely.</p> <p>Pupils will attach their circuits to the housing they have manufactured and test to see if the prototype works.</p> <p>Pupils will evaluate their work. Pupils test their technical knowledge.</p>	<p>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Evaluate how effective their research was and use it to inform their ideas for their product.</p> <p>Explain and discuss the concept of the specification in the design process. Pupils will develop a specification for the project using the 'Developing a Specification' sheet.</p>	<p><b>Understand and respectful relationships, including friendships.</b></p> <p>The legal rights and responsibilities regarding equality will be reinforced with reference to the Equality Act 2010 that everyone is equal and unique. Students must consider that not all their peers will be able to tolerate the noise from their steady hand game and must be mindful when testing them.</p> <p><b>Linking curriculum learning to careers</b></p> <p><b>Lighting is a major part of the Electrical/Electronic sectors and is constantly in need. As a results jobs are always available in that field. Electrical engineering technicians install, repair and maintain electrical equipment, systems and controls.</b></p> <p>Students can get into this job through:</p> <ul style="list-style-type: none"> <li>• a university course</li> <li>• a college course</li> <li>• an apprenticeship</li> <li>• applying directly</li> </ul> <p>University Students can do a foundation degree or higher national diploma in electrical and electronic engineering.</p> <p>Entry requirements They will usually need:</p> <p>1 or 2 A levels, or equivalent, for a foundation degree or higher national diploma</p>	
Summer 1	Children will designing their own article of clothing.	Select from and use a wider range of materials and components, including vinyl materials and	Briefly explain the process of operating the vinyl cutter.	

	<p>Understand the process of designing a piece of clothing.</p> <p>Produce a detailed specification for the product.</p> <p>Communicate alternative ideas using words, labeled sketches and models, showing that they are aware of constraints.</p> <p>Use some ideas from others' designing to inform their own work.</p> <p>Evaluating customer requirements by development through spider diagrams and peer assessments.</p> <p>Transfer of designs to shirt.</p> <p>Write an evaluation and reflect on the specification points.</p>	<p>textiles, according to their functional properties and aesthetic qualities.</p> <p>Research existing designs using ACCESS FM.</p> <p>Discuss the design situation and give an example of the brief pupils could use. Pupils will present a Situation and Design Brief for the project.</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p>	<p>Tasks and assignment briefs will instill resilience in learners whether working individually or as part of a team.</p> <p>Linking curriculum learning to careers</p> <p>Training or possible apprenticeships considered for (18 to 22 years old) in Digital Garment decoration.</p> <p>Daily tasks include :</p> <ul style="list-style-type: none"> <li>• Preparing artwork for our large format print</li> <li>• Weeding vinyl</li> <li>• Using a vinyl cutter and preparing artwork for vinyl cutting</li> <li>• Colour separations for screen printing</li> <li>• Using a Heat Press and Roland and Epson wide-format printers</li> </ul> <p>Understand and respectful relationships, including friendships.</p> <p>Students will understand that stereotype based on disability, religion, sexual orientation or race can cause damage when evaluating their products based on the views of others.</p> <p>Students will also be encouraged to be honest, respectful and kind when doing peer assessments.</p>	
Summer 2	<p>Introduction to the bird house project.</p> <p>Design development through spider diagrams &amp; sketches.</p> <p>Design development through sketches / digital modelling.</p>	<p>To know how to research and use the information to support design development.</p> <p>To create and use a spider diagram to develop design ideas.</p> <p>To use the research to create and develop design ideas.</p>	<p>Complete research using the internet guided by ACCESS FM.</p> <p>Individual designs will be produced allowing teacher support and stretch for more able students.</p>	<p>Students' work will be judged on a variety of success criteria including <a href="http://www/ebi">www/ebi</a> after specifications.</p> <p>Individual photographs will be taken to form a diary of</p>

Produce a specification based on research and design work.

Final Design using CAD CAM.

Manufacture clock using laser cutter or other machine.

Write an evaluation and reflect on the specification points.

To understand how the laser cutter works using different colour lines and power settings from 2D Design.

To evidence through photos and notes how the clock was manufactured.

To be able to evaluate the completed product and collect feedback from peers.

Sketch ideas by hand. Colour, annotate and label.

Use Tech soft 2D templates to help develop ideas.

Write a 5 point specification for their own design.

Cut designs using the laser cutter. Construct the clock.

#### Linking curriculum learning to careers

Students will understand that providing solutions to different engineering briefs will be of great help in the future. They can be a Design and Development Engineer and use their skills to improve product performance and efficiency while researching and developing new manufacturing ideas.

#### Mental Health and Well being

Students are encourage to express themselves through their creativity and designs. Design tasks can create a calm and serene environment conducive to learning. Students who do not feel comfortable in talking about their emotions can do so through designs.

Design will develop their creativity and help them express themselves which provides a variety of potential solutions and embracing experimentation. This will also assists the teachers and school to find fresh and unusual solutions to complicated challenges.

manufacturing progress. Individual skills can be assessed.

Peer assessments.