

Subject overview:KS3-Design & Technology

Subject Rationale (Intent) linked to [whole school curriculum mission](#)

Design and technology prepares students to participate in tomorrow's rapidly changing technologies. They will learn to be curious thinkers and intervene creatively to improve quality of life. The subject calls for students to become autonomous and creative problem solvers, as individuals and members of teams.

Additional details

We believe secondary art and design builds on the skills and knowledge pupils have already learnt at primary school. It leverages increasingly sophisticated resources, including dedicated teaching environments, manufacturing equipment and specialist teaching. As students' progress through this phase, they may be given the opportunity to focus on specific aspects of the subject such as art, product design, food technology and engineering, with its core always encompassed around creativity and imagination. Over the year, students will build their confidence in using such machines and techniques to take forward into their own independent learning.

The key aim is to help students learn to design and make products that solve genuine, relevant problems within different contexts whilst considering their own and others' needs, wants and values, and enabling students in making links through transferable skills in other subjects. To do this effectively, they will acquire a broad range of subject knowledge and draw on additional disciplines such as mathematics, science, engineering, computing and art.

YEAR 7

TERM	Topic sequence (What are you teaching?)	Topic sequence rationale (Why are you teaching this? How does it link to prior learning? Any notable links to St Edmund's curriculum mission)	Main method of assessment?
UNIT 1	<p>Key Skills Box</p> <p>Students will measure, mark, cut, finish and manufacture a timber box with a range timber joints that progressively become more challenging</p> <ul style="list-style-type: none"> ● Introduction to workshop health & safety ● Developing and understanding timber types and their characteristics ● Understanding what sustainable forestry and the importance of it ● Being able to identify different types of finishes and the characteristics of each ● Recognising examples of permanent & temporary fixings ● Identifying different timber joints 	<p>At KS2 students have some exposure to core engineering skills, some students will come in with some knowledge of timbers but this will be very basic. The curriculum has been designed to bridge the gap and then to build on core foundations of Engineering from safety within the workshop to practical skills and manufacturing.</p> <p>The curriculum is split into 2 projects. The first is to develop the important key skills and knowledge when designing and making. Students will be shown links between Engineering and other subjects such as Maths and Science through STEAM subjects and Geography. Students develop knowledge of materials and their characteristics as well as looking at real world examples of where materials and components come together to make a functioning product.</p> <p>Students will build up a vocabulary of key technical words, specialist language with Engineering & Design & Technology as a whole. Identify key issues such as the environment and the impact products have on it. How to manufacture different timber joints which become increasingly more challenging.</p> <p>The second project builds on the knowledge learnt in project 1. Students will develop further knowledge on tools and equipment used to manufacture products. Students will learn about different methods and alternatives to completing a practical activity e.g. removing waste material.</p> <p>Students will link to subjects such as Art and Design to develop design ideas to be applied to their Birdhouse.</p>	<p>Students will be assessed on their understanding of timber types and characteristics.</p> <p>Their ability to measure accurately, mark, cut and finish their timber box.</p> <p>Their ability to research and understand sustainable forestry, finishes, fixings and timber joints.</p>
UNIT 2	<p>Birdhouse Project</p> <p>Students will measure, mark, cut, finish and manufacture a timber/cardboard Birdhouse.</p> <ul style="list-style-type: none"> ● Students will be able to use and explain the uses of a range of tools used for <ul style="list-style-type: none"> ○ Marking Out Tools ○ Wasting and Abrading Tools ○ Cutting Tools ● Develop a range ideas for their birdhouse and then apply the design and finish to their Birdhouse ● Be able to keep a production log throughout the manufacture to identify 		<p>Students will be assessed on their ability to use skills developed in Unit 1 to measure accurately, mark, cut, finish and join their birdhouse.</p> <p>Their ability to explain the uses of a range of marking out, cutting, wasting and abrading tools.</p> <p>Their design skills</p>

	and reflect on areas of strength and areas for improvement.		for the final finish on their birdhouse and the ability to reflect on their strengths and areas of improvement.
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YEAR 8			
TERM	Topic sequence (What are you teaching?)	Topic sequence rationale (Why are you teaching this? How does it link to prior learning? Any notable links to St Edmund's curriculum mission)	Main method of assessment?
UNIT 1	<p>Desk Tidy Project</p> <p>Students will measure, mark, cut, finish and manufacture a timber/cardboard Desk Tidy. Students will be:</p> <ul style="list-style-type: none"> ● Identify and Use ACCESSFM to analyse examples of existing desk tidy products. Starting with a with criteria and then completing an analysis with all criteria ● Students will identify what a Parts list is and then produce a parts list for all items that could go into the desk tidy <ul style="list-style-type: none"> ○ Introduction to precision tool - Digital Vernier Calipers ● Design product layout for manufacturing Desk Tidy. ● Manufacture Desk Tidy <ul style="list-style-type: none"> ○ Use a range or tools to accurately mark out the product. ○ Use a range of tools to cut and shape product ○ Use drilling machines/drills to 	<p>Building on skills learnt in Year 7 to be able to design and manufacture a desk tidy. Students will be looking at new higher level skills in this project from the soldering process to manufacture a circuit to using CAD to produce a design in Acrylic.</p> <p>Students will further develop skills from Year 7 with the marking out, cutting, filing, finishing and manufacture of the desk tidy. Students will also be using new machinery in scroll saws to further develop key skills/higher level skills in manufacturing their product.</p> <p>Students will continue to build deeper links with STEAM subjects particularly with Maths and Science. The project will continue to make links throughout the project so that students understand that DT/Engineering is the application of Maths and Science.</p> <p>Students will continue to build up a vocabulary of key technical words, specialist language with Engineering & Design & Technology as a whole.</p>	<p>Students will be assessed on their ability to use skills to measure accurately, mark, cut, finish and join their Desk Tidy. Their ability to explain the uses of a range of marking out, cutting, wasting and abrading tools. Their design skills for the final finish on their Desk Tidy and the ability to manufacture a working LED circuit. Ability to use CAD software to design a light fitting for their desk</p>

	<ul style="list-style-type: none"> ○ cut holes in the product ○ Use a range of tools to file and finish product ● Being able to identify different types of finishes and the characteristics of each ● Research and Design a Layout Finish for desk tidy ● Be able to identify and understand different components in a circuit and their job in a circuit. ● Understand the process of soldering a circuit including the potential hazards and injuries and what to do. ● Be able to manufacture a working circuit ● Use CAD software to manufacture a component to add on to the LED to work as a night light or decorative piece. 		tidy
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YEAR 9			
TERM	Topic sequence (What are you teaching?)	Topic sequence rationale (Why are you teaching this? How does it link to prior learning? Any notable links to St Edmund's curriculum mission)	Main method of assessment?
UNIT 1	<p>Casting & Jewellery Project</p> <p>Students will manufacture jewellery using recycled/off cut materials - MDF and Acrylics. Students will be:</p> <ul style="list-style-type: none"> ● Introduced to Design Briefs ● Identify and Use ACCESSFM to analyse examples of existing jewellery type products. Starting with a with criteria and then completing an analysis with all criteria 	<p>The project is building on all skills developed since Year 7. Students will be introduced to Design Briefs and the process of research which links back to Year 8.</p> <p>Students will develop initial thumbnail sketches which include rendering and labelling. Students will get feedback to allow for improvements to the developed ideas. Students will take forward 3 ideas to manufacture. Students will be given demonstrations on a range of techniques from lasering, to simple hand tools. Students will be expected to develop independence skills to manufacture their jewellery.</p> <p>Students will use a range of techniques including Casting and</p>	<p>Students will be assessed on their ability to research and analyse existing products and use skills to design and accurately manufacture their jewellery pieces. Their design skills</p>

	<ul style="list-style-type: none"> ● Producing initial design ideas ● Students to select and developed design ideas ● Get feedback from peers on design ideas ● Use of a range of skills learnt in year 7 & 8 to independent manufacture jewellery from recycled material <ul style="list-style-type: none"> ○ Use a range or tools to accurately mark out the product. ○ Use a range of tools to cut and shape product ○ Use a range of tools to file and finish product ● Introduction into CNC (Lasering) ● Introduction into Casting (Pewter) 	Lasering.	for Jewellery pieces, and to work independently. Use a range of tools and equipment independently.
UNIT 2	<p>Structures Project</p> <p>Students will work in teams to build a structure to securely hold an object. Students will:</p> <ul style="list-style-type: none"> ● Research into existing structures ● Develop designs for the potential structure ● Manufacture the structure using simple materials and limited amount of resources ● Test structure to see if it holds the object securely ● Evaluate on the outcome 	<p>This project is designed to build on teamwork skills, the project will be a team competition where students will research and investigate structures, present findings to the team and then develop ideas. These will again be presented to the team and a final idea will be put forward to be manufactured.</p> <p>Students will be given a limited number of resources to manufacture and test the product. Team members will be given roles within the manufacturing process such as procurement, construction, data analyst etc to ensure the production and testing runs smoothly. Students will be testing their structures based on predetermined parameters and standard tests for all to see which team has the more secure structure.</p> <p>Students will present findings to show the journey taken from the initial research to the finished product.</p>	Students will be assessed on their ability to work as a team and to be able to take on roles within the team to produce a solution to the structure's problem. Research and analyse existing products, develop designs and manufacture a structure. Test and them present findings

