



## Topic Overview

**Faculty/Subject: Innovation/DT**  
**Year Group: 9**  
**Topic: Pencil case**



**What BIG IDEAS will you cover in this topic?**  
 students are asked to showcase prior knowledge from Primary school and beyond to demonstrate the design technology influences they have been exposed to. Recap health and safety in the workshop. Revisit conversion of measurements.

Students will learn basic freehand sketching techniques. The differences between oblique and isometric

Students will learn different wood joints and how to draw, model and manufacture them.

Students will make a keepsake box using a variety of joints that they choose, finished with a custom laser cut lid.

**What other key concepts, knowledge and skills will you learn in this topic?**

- The design process
- What constitutes high quality design
- Linking designs back to a specification (criteria)
- Equipment, uses and health & safety
- Peer and self-evaluation
- CAD
- Finger joint
- Halving joint
- Lap joint
- Dowel joint
- finishes

**What important prior knowledge will you use from your prior learning?**

- Looked at safety and hygiene in other DT rooms
- Worked with resistant materials such as acrylic, pine, paper, card.
- CAD skills from y7+8
- Workshop tools skills from y8
- Drawn, coloured and talked about their ideas

**Where does this topic fit into the curriculum plan for this subject?**

Students will use research and exploration, to identify and understand user needs identify and solve their own design problems and understand how to reformulate problems given to them develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations use a variety of approaches [for example user-centred design] to generate creative ideas and avoid stereotypical responses develop and communicate design ideas using annotated sketches select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties investigate new and emerging technologies test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists understand and use the properties of materials and the performance of structural elements to achieve functioning solutions.

**Assessment:**  
**How and when will you be assessed on this topic?**  
**What will the success criteria be?**

- Class discussion, peer assessment and oral assessment.
- Teacher and student written assessment of practical work, technical language and evaluation.
- Self, peer, oral and teacher assessment methods as indicated within the scheme.
- Students will self-evaluate and set targets for future development.

EXCELLING (+, +)		
	T1	T2
	<p><b>All of the secure criteria plus:</b>            Describe improvements you could make and how you make them. Be able to work with a fine margin of tolerance, and carry out quality control checks.</p>	
	<p><b>All of the secure criteria plus:</b>            Be able to analyse besides choices when making about sustainability. Understand the terms anthropometric and ergonomics and their connection to health.</p>	
	SECURE	
	T1	T2
	<p><b>Assessment strategy:</b>            Inferential and practical assessment            Peer and self-evaluation            Peer or groupwork or PBL/CBL</p>	
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Technical Knowledge	<p><b>Identify, explain and explore</b> technical equipment, materials, components and techniques.</p> <p>Recognise and <b>explain</b> that mechanisms have to meet a range of different needs in relation to usability, be able to explain how to make a range of mechanisms.</p>	<p><b>Explain</b> from terms 1 and 2 plus: <b>Understand</b> the characteristics of different materials, components and processes.</p> <p><b>Understand</b> a range of advanced specialist techniques.</p> <p>Be able to explain the difference between different joints and mechanisms and their appropriate uses.</p>
Evaluating	<p><b>Complete</b> design identified product against the design brief.</p> <p>Suggest <b>improvements</b> for their product with reasons.</p> <p>Use <b>technical terminology</b> from <b>examining, describing and evaluating</b>.</p>	<p><b>Explain</b> from terms 1 and 2 plus: <b>Explain</b> why materials or techniques have been used.</p> <p><b>Identify</b> and <b>justify</b> any changes from the final design idea to the final product.</p>
Practical Making	<p><b>Select &amp; use</b> a range of tools, equipment and materials.</p> <p>Be able to make a variety of wood joints or mechanisms.</p> <p>Work <b>accurately</b> and within <b>tolerance</b>.</p> <p>Produce a <b>well designed, quality</b> product of the final product.</p>	<p><b>Everything</b> from terms 1 and 2 plus: <b>Work</b> from your own <b>detailed plans</b>.</p> <p>Use a range of tools and equipment with <b>precision</b>.</p> <p>Carry out a range of <b>specialist techniques</b> such as using specialist equipment and produce a <b>high quality</b> well considered final product.</p>
	DEVELOPING (+, +)	
	<p>Not yet secure with all of the criteria set out for the term.</p>	
	<p>Student feedback and their steps forward</p>	

**What is the key vocabulary that you will need to know in this topic?**

- As defined in objectives, activities and outcomes through writing, speaking, listening and reading.
- Through the activities in this unit, pupils will be able to understand, use and spell correctly words relating to: Manufacture, coping saw, tenon saw, template, Isometric,

**What is the structure of learning/lessons in this topic?**

**Theory** - Introduction to free hand sketching, Isometric and oblique drawing and the differences.  
**Theory/practical**- 3D drawing techniques  
**Theory/practical**-  
**Practical x2**- measuring, marking out, cutting, filing and glueing together 2 practice wood joints to gain practical skills ready for final product  
**Practical x4**- measuring, marking out, cutting, filing and glueing final finger joint box  
**Practical**- CAD work on 2D design creating template for the laser cut lid  
**Practical** - glue and pin base, apply thin layer of varnish  
**Theory** - evaluation

