

Design and Technology: Y7

Medium term Plan

Autumn Term 1

Learning Overview (Contents)	Materials and manufacturing processes
Assessment Opportunities	Assessment is based on classwork, homework assignments, Tri-weekly tests and end of unit tests. In addition to these students will also be assessed on their practical assignments with a 50/50 ratio in these to reflect the GCSE assessment criteria. • BBC Bitesize – KS3 Design and Technology • URL: https://www.bbc.co.uk/bitesize/subjects/zfr9wmn • Technologystudent.com • URL: https://www.technologystudent.com • 3. HowStuffWorks – Science & Tech • URL: https://www.howstuffworks.com • 4. IET Education (The Institution of Engineering and Technology) • URL: https://education.theiet.org
Textbooks Published Lesson Resources	• Title: Collins Key Stage 3 Design and Technology Student Book • Title: Design & Technology: KS3 Textbook (9-1 GCSE Foundation), • Title: Smart Skills: Design and Technology – Key Stage 3

Home Learning Resources	All learning material will be shared with students in their workbooks. BBC Bitesize/TES resources/Design and Technology student.
Knowledge organisers	Shared with students at the end of each lesson. This will be added to their workbooks.

Week Number	Learning Overview / objective (outlined above)	What should pupils know, understand and be able to do by the end of the week? (Use clear Success criteria)
1. Materials in Design	1. Identify key material categories (metals, polymers, woods, etc.) 2. Explain properties relevant to product design 3. Classify materials by source and structure 4. Apply materials knowledge to basic design choices	Overview of material types and their properties. Relevance to product performance, aesthetics, and function. Design and model a simple product using deforming processes (e.g. a metal coat hook or card structure). Explain how deformation can change material strength using real-world examples.
2. Wasting Manufacturing Processes	1. Define "wasting" processes (e.g. cutting, drilling) 2. Identify tools used in wasting 3. Explain advantages/disadvantages of wasting 4. Apply knowledge to choose appropriate processes for different materials	Introduction to wasting methods (sawing, milling, turning). Tool demonstrations and safety. Tool identification quiz; Annotate a diagram showing where and why wasting is used in making a simple product. Create a flowchart for a wasting process of your choice (e.g. cutting a wooden panel).

3. Material Selection	1. Understand key factors in material selection (cost, function, availability) 2. Evaluate materials for specific applications 3. Use material property tables effectively 4. Consider user needs and product context in decision-making	Selecting the right material for a design based on performance and other constraints. Material selection matrix activity: choose the best material for a set of example products. Choose a common product and suggest an alternative material that could improve it. Justify your choice. Tri-weekly test
4. Fabricating Manufacturing Processes	1. Define "fabricating" and identify common techniques 2. Understand how materials are joined (permanent/semi-permanent) 3. Compare fabrication vs. other methods 4. Use fabrication to build/modify products	Fabrication techniques: welding, riveting, screwing, gluing. Pros/cons. Watch fabrication demo or video; Group task: Plan how to fabricate a basic structure from a material of your choice. Sketch and label a fabricated product and identify where each process was used.
5. Material Sustainability	1. Define sustainability in context of materials 2. Understand environmental impacts of material extraction and disposal 3. Evaluate materials based on lifecycle 4. Consider ethics in design decisions	Environmental and ethical concerns in materials usage. Life cycle analysis. Life cycle analysis of a plastic bottle vs. metal can; Class debate: "Should designers always choose sustainable materials?" Research one material's environmental impact and suggest ways to make its use more sustainable.
6. Deforming Manufacturing Processes	1. Understand what "deforming" means in manufacturing 2. Identify key processes (bending, folding, pressing) 3. Link deformation to material properties 4. Apply deformation in design ideas	Demonstrate deforming processes (manual and machine methods); Impact of heat and force. Design and model a simple product using deforming processes (e.g. a metal coat hook or card structure). Explain how deformation can change material strength using real-world examples. Tri-weekly Test
7. Minimising Material Waste	1. Understand the importance of reducing waste 2. Identify ways to design for minimal waste 3. Learn about nesting and layout strategies 4. Apply design thinking to sustainability	Concepts: efficient cutting, modular design, minimal off-cuts. Introduce CAD/CAM's role in reducing waste. Design challenge: optimise a cutting pattern for minimal waste; CAD demo (optional). Design challenge: optimise a cutting pattern for minimal waste; CAD demo (optional).
8. Reforming Manufacturing Processes	1. Define "reforming" and identify examples (moulding, casting) 2. Understand how reforming changes material shape permanently 3. Compare hot vs. cold forming 4. Recognise safety and quality issues	Explore processes like injection moulding, vacuum forming, casting. Show industrial applications. Demonstration or video on reforming; Worksheet: label stages in injection moulding and identify quality checks. Create a flowchart showing the reforming process for a product (e.g. plastic bottle)
9	Assessment	End of Unit Test Theory accounts for 50% of the Unit Assessment

Design and Technology: Y7

Medium term Plan

Autumn Term 2

Learning Overview (Contents)	Practical Project: Wooden Model Train Project
Assessment Opportunities	Assessment is based on classwork, homework assignments, Tri-weekly tests and end of unit tests. In addition to these students will also be assessed on their practical assignments with a 50/50 ratio in these to reflect the GCSE assessment criteria. • BBC Bitesize – KS3 Design and Technology • URL: https://www.bbc.co.uk/bitesize/subjects/zfr9wmn • Technologystudent.com • URL: https://www.technologystudent.com • 3. HowStuffWorks – Science & Tech • URL: https://www.howstuffworks.com • 4. IET Education (The Institution of Engineering and Technology) • URL: https://education.theiet.org
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1. Reading a First-Angle Orthographic Sketch of the Toy Train	1. Interpret dimensions and views of a 2D drawing 2. Identify components of the toy train 3. Understand scale and proportion 4. Visualise the 3D shape from 2D views	Reading and understanding orthographic projections, Label parts on a train drawing, sketch a 3D view, Match 3D views to orthographic drawings worksheet
2. Cutting Components to Size	1. Select correct tools for cutting wood 2. Cut materials safely and accurately 3. Understand measurements in mm 4. Work to a basic tolerance	Sawing techniques and accuracy in practical work, Mark and cut base and body pieces for train, Reflect on tool use and accuracy in a journal
3. Measuring and Marking Out a Housing Joint	1. Define what a housing joint is 2. Accurately mark the joint using a try square 3. Use a marking gauge correctly 4. Understand purpose of tight fitting joints	Housing joints for connecting cabin to base, Measure and mark housing joint on cabin piece, Complete diagram showing parts of a housing joint, Tri-weekly test
4.	1. Use a pillar drill or hand drill safely	Axle holes and spacing for movement, Drill holes in train base and wheels for axles,

Drilling Holes for the Axles	2. Mark centre points for drilling 3. Select correct drill bit for axles 4. Test fit axle rods through wheels and base	Write short reflection: safety considerations during drilling
5. Attaching Wheels, Axles & Marking Roof	1. Insert and test axles with wheels 2. Ensure free wheel movement 3. Mark roof shape onto timber 4. Use templates or measure curves accurately	Wheel assembly and shaping cabin roof, Attach wheels, cut and refine roof component, Sketch a side view showing attached components
6. Gluing Components Together	1. Identify appropriate adhesives for wood 2. Apply glue neatly and clamp properly 3. Follow assembly order correctly 4. Check alignment of all parts	Final assembly steps before finishing, Glue all parts and clamp to dry Check alignment Write step-by-step instructions of your build so far
7. Name Plate Design & Laser Cutting	1. Create a nameplate in 2D Design 2. Add suitable fonts, colours and size 3. Prepare file for laser cutting 4. Operate laser cutter safely	Simple CAD skills and CAM process overview, Design and cut a personalised train nameplate, Bring in or sketch ideas for your next CAM design.
8. Assembly, Finishing, Evaluation & Display	1. Attach name plate and final details 2. Sand and finish surface safely 3. Evaluate the finished product 4. Prepare train for public display	Final quality checks and presentation, Add name plate, paint/stain train, complete evaluation form, Complete peer review of another student's project

Assessment Criteria:

Grade	Descriptor
9–8 (Exceptional)	Shows outstanding design thinking and practical skill. Designs are highly creative, clearly informed by research or stylistic references (e.g. Art Deco). All components are measured and cut with precision. Assembly is flawless, with smooth-functioning wheels and tight joints. Finishing is refined and professional. Evaluation is detailed and highly reflective.
7–6 (Secure and Effective)	Demonstrates confident and effective skills. Designs are clearly presented and meet the specification well. Components are measured and marked with a high degree of accuracy. Assembly is mostly smooth and secure. Finish is neat with some creativity. Evaluation identifies strengths and areas for development with clear reasoning.
5–4 (Developing and Competent)	Demonstrates a sound understanding with developing technical skills. Design work is clear but may lack detail or creativity. Some components are measured or cut inaccurately, but the project is functional. Assembly may have gaps or slight misalignment. Finishing is basic. Evaluation is brief and covers some key points.
3–2 (Emerging)	Limited application of skills. Design ideas are simple or incomplete. Measurement and marking out are inconsistent. Assembly has functional or structural issues. Finish is rough or incomplete. Evaluation is superficial or mostly descriptive. Support needed throughout the project.
1 (Minimal Understanding)	Shows very little understanding of the design and making process. Designs may be missing or unclear. Components are not accurately cut or assembled. Project may be incomplete or unsafe. No meaningful evaluation provided. Demonstrates minimal effort or engagement.

Assessment Area	Weighting
• Planning & Design	20%
• Measuring & Marking Out	20%
• Making & Assembly	25%

Design and Technology: Y7

Medium term Plan

Spring Term 1

Learning Overview (Contents)	Drawing and presentation techniques in Design and Technology
Assessment Opportunities	Assessment is based on classwork, homework assignments, Tri-weekly tests and end of unit tests. In addition to these students will also be assessed on their practical assignments with a 50/50 ratio in these to reflect the GCSE assessment criteria. • BBC Bitesize – KS3 Design and Technology • URL: https://www.bbc.co.uk/bitesize/subjects/zfr9wmn • Technologystudent.com • URL: https://www.technologystudent.com • 3. HowStuffWorks – Science & Tech • URL: https://www.howstuffworks.com • 4. IET Education (The Institution of Engineering and Technology) • URL: https://education.theiet.org
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Home Learning Resources	All learning material will be shared with students in their workbooks. BBC Bitesize/TES resources/Design and Technology student.
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Week Number	Learning Overview / objective (outlined above)	What should pupils know, understand and be able to do by the end of the week? (Use clear Success criteria)
1. Crating Techniques	1. Understand what crating is and why it's used 2. Use crating to draw 3D shapes with accurate proportions 3. Identify vanishing points and construction lines 4. Develop confidence in freehand sketching	Introduction to crating as a drawing technique to build form and structure; grid method and light construction lines. Draw a basic object (e.g. a pencil case or mobile phone) using crating method; peer critique. Find 3 everyday objects at home and sketch them using crating technique in your sketchbook
2. Rendering Techniques	1. Define rendering and its purpose in design 2. Apply tone to suggest depth and form 3. Use rendering to enhance texture and surface 4. Match rendering style to different materials	Demonstrate rendering techniques using pencil (shading, tonal gradients, texture for wood, metal, plastic). Students render 3D shapes (cube, cylinder) to show wood, metal and plastic. Render a simple object at home using one material finish (e.g. wood). Annotate material.

3. Realistic Rendering Techniques	1. Create more advanced rendering using highlights and shadows 2. Use coloured media to simulate real-world materials 3. Blend tones smoothly for realism 4. Evaluate effective rendering in professional examples	Advanced rendering: highlights, shadows, reflections; using colour pencils, fine liners and markers. Students complete a full-page realistic render of a designed product in colour. Find and annotate a professionally rendered design image from a magazine or online. Tri-weekly test
4. One-Point Perspective	1. Understand the concept of perspective and depth 2. Identify horizon line and vanishing point 3. Draw 3D forms using one-point perspective 4. Apply perspective in real product sketches	Step-by-step demonstration of one-point perspective. Horizon line, vanishing point, receding lines. Students draw a simple street or room layout; then attempt a product (e.g. speaker or desk). Draw a one-point perspective view of your room or desk space.
5. Orthographic Projection	1. Understand the purpose of orthographic projection 2. Identify front, side, and plan views 3. Interpret orthographic drawings 4. Recognise and use standard conventions	Explain orthographic drawing and why it's used in industry; introduce 1st and 3rd angle projection. Analyse sample orthographic drawings; label parts and identify missing views. Complete an orthographic interpretation worksheet (identify missing views of a product).
6. Draw Orthographic Projection	1. Create accurate orthographic projections from 3D views 2. Use appropriate layout and conventions 3. Dimension drawings clearly and accurately 4. Work to scale where appropriate	How to set out an orthographic projection on paper. Use drawing boards or paper templates. Students draw orthographic views of a given object (e.g. simple block or product). Include dimensions. Tri-weekly Test
7. Cross-Sectional Drawings	1. Understand the purpose of cross-sectional views 2. Recognise where and how sections are used 3. Draw a basic sectional view of a product 4. Interpret and label components within a section	Teach how to show internal features using section lines and hatching. Use simple examples (e.g. bottle, box). Draw a cross-section of a product (e.g. pen, box with compartments); label parts. Draw an orthographic projection of a small object from home (e.g. remote control or pencil case). Research and bring in an image of a cross-sectioned product. Identify what is revealed.
8. Exploded Drawings	1. Understand why exploded views are used in D&T 2. Identify key parts of a product and their relationship 3. Draw an exploded view using guides and spacing 4. Label components and show correct order of assembly	Introduction to exploded drawings. Demonstrate guide lines, spacing and how to show correct part orientation. Students produce an exploded view of a simple product (e.g. torch or desk tidy) with labels. Reflective task: Explain when and why an exploded view is more useful than a standard drawing.
9	Assessment	End of Unit Assessment Accounts for 50 % of the term mark.

Design and Technology: Y7

Medium term Plan

Spring Term 2

Learning Overview (Contents)	Practical Project : Desk Phone Holder
Assessment Opportunities	Assessment is based on classwork, homework assignments, Tri-weekly tests and end of unit tests. In addition to these students will also be assessed on their practical assignments with a 50/50 ratio in these to reflect the GCSE assessment criteria. • BBC Bitesize – KS3 Design and Technology • URL: https://www.bbc.co.uk/bitesize/subjects/zfr9wmn • Technologystudent.com • URL: https://www.technologystudent.com • 3. HowStuffWorks – Science & Tech • URL: https://www.howstuffworks.com • 4. IET Education (The Institution of Engineering and Technology) • URL: https://education.theiet.org
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Week Number	Learning Overview / objective (outlined above)	What should pupils know, understand and be able to do by the end of the week? (Use clear Success criteria)
1. Project Introduction & Design Brief	1. Understand the project goals 2. Analyse user needs 3. Investigate existing phone holders 4. Develop a clear design brief	Intro to the design challenge, analyse existing products, discuss function and form. Mindmap key features; annotate sketches of existing products. Write your own design brief for the phone holder
2. Design Specification & Initial Ideas	1. Write a detailed design specification 2. Generate design ideas 3. Annotate sketches 4. Consider materials and ergonomics	How to write a spec; sketching techniques; ergonomic considerations. Create 2–3 initial design ideas with notes on material, size, and function. Finalise your preferred design and explain how it meets the specification.
3. SketchUp – Introduction & Basic Modelling	1. Use key SketchUp tools 2. Model basic 3D shapes 3. Apply accurate measurements 4. Begin 3D modelling of phone holder	Introduction to SketchUp interface and 3D thinking. Start modelling phone holder design in SketchUp. Practice creating simple 3D shapes at home using SketchUp Free (optional).

4. SketchUp – Design Development	1. Refine digital model 2. Add construction details 3. Use components and groups 4. Match CAD model to original sketch	Advance modelling techniques – chamfers, cut-outs, grouping. Develop full 3D CAD model of phone holder with dimensions. Screenshot your model and label each component.
5. SketchUp – Presentation & CAD Outputs	1. Create orthographic and isometric views 2. Use scenes and styles 3. Export CAD files for printing 4. Evaluate CAD model accuracy	Teach layout for orthographic views and rendering. Create presentation views of final design; print or save. Add annotations to printed CAD views and prepare for manufacture.
6. Materials Selection & Tools Introduction	1. Choose suitable materials 2. Understand material properties 3. Select tools for the job 4. Consider sustainability	Discuss materials (wood, metal, plastic), tools needed, sustainability. Complete material choice worksheet and identify tools required. Write a short justification for your material choice
7. Measuring & Marking Out	1. Use measuring and marking tools 2. Work to accurate dimensions 3. Mark parts efficiently to reduce waste 4. Apply safe working practices	Demonstrate measuring, squares, templates, and layout planning. Students mark all components on chosen materials. Peer check. Draw and label a scale diagram of your product with final measurements.
8. Cutting & Shaping (Wood/Acrylic/Metal)	1. Use saws and shaping tools safely 2. Follow cut lines accurately 3. Shape materials to match design 4. Maintain workshop safety	Demo cutting (e.g. tenon saw, coping saw) and shaping (files, rasps). Begin cutting components of the phone holder. Take photos of your cutting progress; write a reflection.
9. Drilling, Filing & Forming Components	1. Use drill and filing tools with care 2. Create accurate holes and smooth edges 3. Adjust parts for better fit 4. Problem-solve as needed	Drill use and finishing techniques. Troubleshooting misalignments. Drill holes, file shapes, refine fit and form of components. Drill holes, file shapes, refine fit and form of components.
10 11. Final Assembly (Fixings & Adhesives)	1. Evaluate against the design specification 2. Reflect on the design and making process 3. Present product professionally 4. Suggest improvements for future iterations	Teach structured evaluation: function, aesthetics, process, improvements. Complete written evaluation. Present phone holder and SketchUp design. Peer review. Write a final reflection on your progress and what you would do differently

Assessment Rubric – Desk Phone Holder Project (KS3, Levels 9–1)

Assessment Areas:

1. Design & Planning
2. Safe Use of Tools & Workshop Practice
3. Accuracy & Dexterity in Making
4. Finishing Techniques
5. Evaluation & Reflection

Grade	Design & Planning	Tool Use & Workshop Safety	Accuracy & Dexterity	Finishing Techniques	Evaluation & Reflection
9–8	Exceptionally creative and well-developed design with clear specification, full working drawings (e.g. CAD/SketchUp), and justification of materials.	Works with complete independence and precision. Demonstrates excellent awareness of safety and safe tool use. Supports others.	Outstanding precision in measuring, cutting, and assembly. Excellent hand skills and attention to detail.	Professional standard: smooth edges, clean surfaces, perfect finish (e.g. varnish/paint), enhanced visual quality.	In-depth evaluation that critically reflects on design choices, construction process, function, and user needs. Suggests innovative improvements.
7–6	Detailed design that clearly meets the specification. Includes CAD/SketchUp or annotated drawings showing some iteration.	Uses tools confidently and safely with minimal guidance. Demonstrates good workshop awareness and safe habits.	Good overall accuracy in measurements and joints. Minor errors but shows care and control in making.	Clean and well-applied finish. Smooth edges and mostly neat presentation. Clearly shows pride in work.	Clear evaluation covering function and some improvement suggestions. Reflects on skills and outcomes.
5–4	Basic design meets the brief but may lack originality. Sketches or CAD are simple and annotations limited.	Uses basic tools safely under supervision. Inconsistent tool handling. Follows safety instructions when reminded.	Some components cut/measured inaccurately. Evidence of rushed work. Dexterity developing.	Finish applied but uneven or rushed. Edges may be rough or have excess glue. Shows effort but lacks refinement.	Brief evaluation covering what went well or not. Limited analysis.
3–2	Limited design development. Incomplete or unclear drawings. Weak link to design brief or user needs.	Struggles with correct tool use. Requires close supervision and reminders to follow safety guidance.	Parts inaccurately measured or assembled. Low precision. Tools used awkwardly.	Unfinished or poorly applied finish. Visible damage, rough edges, or excess adhesive.	Minimal evaluation. Descriptive only. Little understanding of user or function.
1	No meaningful design work. No link to the brief or product requirements.	Unable to use tools safely. Requires full support. Unsafe in workshop.	Making incomplete or unsafe. No control or accuracy demonstrated.	No finish applied. Project incomplete or unusable.	No evaluation or reflection provided.

Assessment Weighting:

Assessment Area	Weight
Design & Planning	20%
Tool Use & Safety	20%
Accuracy & Dexterity	25%
Finishing Techniques	20%
Evaluation & Reflection	15%

Design and Technology: Y7 Medium term Plan Summer Term 1

Learning Overview (Contents)	Theory: CAD: Sketchup, Techsoft 2D design
Assessment Opportunities	Assessment is based on classwork, homework assignments, Tri-weekly tests and end of unit tests. In addition to these students will also be assessed on their practical assignments with a 50/50 ratio in these to reflect the GCSE assessment criteria. • BBC Bitesize – KS3 Design and Technology • URL: https://www.bbc.co.uk/bitesize/subjects/zfr9wmn • Technologystudent.com • URL: https://www.technologystudent.com • 3. HowStuffWorks – Science & Tech • URL: https://www.howstuffworks.com • 4. IET Education (The Institution of Engineering and Technology) • URL: https://education.theiet.org
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Week Number	Learning Overview / objective (outlined above)	What should pupils know, understand and be able to do by the end of the week? (Use clear Success criteria)
1. Intro to SketchUp & Interface	- Understand the purpose of SketchUp - Navigate the workspace - Identify key tools (select, orbit, push/pull) - Create basic 2D shapes	Introduce SketchUp interface, camera tools, shape tools Complete basic shape drawing exercises (square, circle, rectangle) Explore orbit, zoom, pan Watch a short tutorial and note 3 tools used

2. Drawing 3D Shapes in SketchUp	- Use push/pull to extrude 2D shapes - Create simple 3D objects - Use tape measure and move tools - Group and name components	Demonstrate extruding shapes and modifying geometry Students model a 3D box with a lid and drawer Apply groups and components Create a simple room layout in SketchUp (optional)
3. SketchUp: Modelling a Desk Tidy	- Apply accurate measurements - Use guides for precision - Build and edit grouped components - Plan a basic product design	Students model a simple desk tidy (box with compartments) Use guides, resize, copy/paste Screenshot design and annotate with tool labels Tri-weekly test
4. SketchUp: Finalising Designs	- Edit and refine existing model - Use materials and textures - Orbit and present design views - Export design as image	Recap key tools Introduce applying materials and exporting Finish and polish desk tidy model Apply materials and create final presentation views Upload final model or email export image
5. Intro to 2D Design & Interface	- Understand purpose of 2D Design (for CAM/laser cutting) - Recognise key tools (line, circle, trim) - Create basic vector shapes - Understand line colours for cut/engrave	Demonstrate basic tools and how line colours affect output Practice drawing and layering a nameplate design Use cut (red) and engrave (blue/black) lines Research one product made using laser cutting
6. Drawing and Editing in 2D Design	- Use duplicate, mirror, and array tools - Create symmetrical and repeating patterns - Group, align, and layer elements - Save files correctly for laser cutting	Teach mirror, rotate, and grouping functions Create a geometric pattern or custom keyring design Apply correct line colours Annotate screenshot with description of tools used Tri-weekly test
7. Finalising 2D Design Project	- Apply design rules for cutting - Prepare file for export - Use text, shapes, and align tools - Review and refine design	Recap best practices for layout and line colour Finalise nameplate or badge Ensure file is saved correctly for cutting Submit design file for feedback or print
8	Assessment	End of Unit assessment Accounts for 50% of the terms overall mark

Design and Technology: Y7

Medium term Plan

Summer Term 2

Learning Overview (Contents)	Practical Project: Bedside lamp
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Week Number	Learning Overview / objective (outlined above)	What should pupils know, understand and be able to do by the end of the week? (Use clear Success criteria)
1. Identify Electronic Components H&S	- Identify common electronic components (resistors, LEDs, switch, battery holder) - Understand circuit diagrams - Learn component polarity - Lay out components for a basic lamp circuit	Introduce components and simple circuit theory, Match components to a diagram, Layout components on paper, Discuss light source safety, Label an A4 circuit diagram
2. Soldering Electronic Components	- Learn safe soldering practices - Solder basic through-hole components - Test assembled PCB or circuit - Identify and fix soldering issues	Demonstrate safe soldering technique and tool handling, Solder components to a PCB or stripboard Test function of the light circuit, None (or revise soldering safety rules)
3. Designing Sides in 2D Design – Part 1	- Use 2D Design tools (line, shape, trim, text) - Create symmetrical lamp side panel - Apply laser-cut colours (cut/engrave) - Save work in correct format	Introduction to 2D Design interface and tools, Students begin designing lamp sides Incorporate personal themes or motifs, Research Art Deco or pattern styles (optional). Tri-weekly test
4. Designing Sides in 2D Design – Part 2	- Refine design layout and align parts - Add decorative patterns or names - Prepare file for export to laser cutter - Understand how design affects light diffusion	Demonstrate file prep and finishing designs, Complete 2D Design file for two laser-cut side panels, Submit design for feedback,
5. Preparing Base from Softwood	- Measure and mark accurately on timber - Cut and sand to correct dimensions - Drill holes for wiring or LEDs - Understand workshop safety rules	Recap measuring and introduce cutting tools, Cut and finish softwood base using tenon saws, files, sandpaper, Bring in a photo or sketch of where lamp will be used (for evaluation).

6. Assemble Sides Using Tensol Cement	- Learn how to use acrylic adhesives safely - Position and glue parts accurately - Understand curing time and ventilation - Fit lighting circuit inside base or shade	Demo tensol cement usage and clamp setup, Glue acrylic sides to base carefully Install light components into housing, Tri-weekly Test
7. Test and Evaluate	- Test functionality of lamp - Check stability and safety - Evaluate strengths and weaknesses - Suggest improvements	Lead discussion on good vs. poor product features, Complete an evaluation worksheet Peer review and photograph final product, Write 3 suggested improvements for next version.
8	End of Unit assessment	

Assessment Rubric: Bedside Table Project

UK National Curriculum | Levels 1–9

Level	Identify Electronic Components & H&S	Soldering Electronic Components	Designing Sides in 2D Design – Part 1	Designing Sides in 2D Design – Part 2	Preparing Base from Softwood	Assemble Sides Using Tensol Cement	Test and Evaluate
7–9 (Mastering)	Accurately identifies a wide range of electronic components. Demonstrates excellent understanding and application of H&S independently.	Soldering is clean, accurate, and reliable. Demonstrates strong technical skills and works independently.	Designs are precise, creative, and purposeful. Advanced use of 2D Design software.	Clear evidence of iterative design development with purposeful refinements based on feedback or testing.	Base is accurately measured and cut. Excellent tool control and a high-quality finish.	Strong, clean, and precise joins. Excellent use of Tensol cement with full independence.	Detailed evaluation with thorough testing. Clear justification of improvements using evidence.
4–6 (Developing)	Identifies most electronic components correctly. Follows H&S procedures with occasional guidance.	Soldering is functional and mostly neat. Minor errors present. Requires minimal supervision.	Designs are mostly accurate and functional. Competent use of 2D Design tools.	Some evidence of refinement or improvement. Designs show progress from earlier stages.	Base is mostly accurate. Reasonable tool use and safe working practices. Finish is acceptable.	Joins are functional and mostly aligned. Safe use of adhesive with some support.	Evaluation includes basic testing and highlights some strengths and areas to improve.
1–3 (Emerging)	Struggles to identify components. Limited understanding or application of H&S. Requires constant supervision.	Soldering is messy or unreliable. Joints may not work. Needs significant guidance.	Designs are basic or inaccurate. Limited understanding or application of CAD tools.	Minimal refinement or design development. Final work similar to initial ideas.	Inaccurate measuring/cutting. Unsafe or ineffective use of tools. Poor finish.		

Assessment Area	Weight
Design & Planning	20%

Tool Use & Safety	20%
Accuracy & Dexterity	25%
Finishing Techniques	20%
Evaluation & Reflection	15%