www.wowimadethat.co.uk

WOW I MADE THAT!

TEACHER Scheme of Work

INFORMATION PACK

WOW I MADE THAT! is an education programme developed by the British Woodworking Federation to provide insight into the Wood and Furniture industries.

BWF
BRITISH WOODWORKING FEDERATION

WOW I MADE THAT!
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WOW I MADE THAT!
About the Education Programme

WOW I MADE THAT! is an education programme created by the British Woodworking Federation (BWF). It has been specifically designed for schools but has the potential to be used by colleges, learning groups, such as STEM clubs, and prison education programmes. Oriented towards project-based learning, the programme is mapped to the national curriculum and associated design and technology qualifications.

The aim of WOW I MADE THAT! is to familiarise students with the Wood and Furniture industries, through a programme of structured learning, researching and designing products. This includes sourcing raw materials through to producing finished products. Each project asks students to research and design a product, identifying the type of raw materials used, considering sustainable design and investigating production processes as well as showing their understanding of environmental issues.

Overview

The main objective of WOW I MADE THAT! is to raise the profile of the Wood and Furniture industries, their importance to the UK, and showcase the possible future careers available within these industries.

Developed specifically for use in schools, WOW I MADE THAT! can also form the basis of study in curriculum time or could be used to support extracurricular activity, for example in STEM clubs.

Crucially the programme has been developed in line with National Curriculum Design and Technology (D&T) requirements in mind and national qualifications, designed to help teach parts of the appropriate examination specifications for GCSE and A Level Design and Technology. It is also ideally suited to use as a resource for teaching Level 1 and 2 Technical Awards and Level 3 Applied General Qualifications in Construction, planning and the built environment.

The programme is open to all students and has been mapped against the Key Stage 3 National Curriculum for England, Design and Technology Programmes of Study, GCSE and A Level Design and Technology. It has been devised to work within the curriculum so that teachers and students can benefit from the knowledge acquired as part of their GCSE, A level and Diploma studies.

Through use of a range of supporting resources, students will learn about the benefits of the various wood and furniture process available to successfully complete this industry-based programme.

To provide teachers with the tools necessary to deliver this programme, a set of teaching aids are available to download from the WOW I MADE THAT! website

www.wowimadethat.co.uk

Participating schools may be requested to take part in media promotion to maximise the effectiveness of the programme.

Mapping

The following mapping includes extracts from programmes of study and examination specifications commonly used in schools. The statements selected below could be addressed through following the accompanying Scheme of Work with a view to engaging with the WOW I MADE THAT! programme. They have been provided below to illustrate how the Scheme of Work can be used to address a significant amount of the content required to be taught.

It is left to the individual teacher's professionalism to decide which content to include and it is also anticipated that the materials will be adapted to reflect individual circumstances. This will include factors such as age, ability level, examination specification and the resources available.

National Curriculum for England Design and Technology Programmes of Study (DfE 2014) Design and Technology Progression Framework produced by the **National Curriculum Expert Group for D&T (The D&T Association 2014)**

Designing

Across KS3 pupils should:

- Select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture;
- Select appropriately from a wider, more complex range of materials, components and ingredients, considering their properties such as water resistance and stiffness;
- Produce ordered sequences and schedules for manufacturing products they design - detailing resources required;
- Create production schedules that inform their own and others' roles in the manufacturing of products they design;
- Communicate their plans clearly so that others can implement them;
- Match and select suitable materials considering their fitness for purpose.

Practical skills and techniques

Across KS3 pupils should:

- Follow procedures for health, safety and hygiene and understand the process of risk assessment;
- Use a broad range of manufacturing techniques including handcraft and machinery skills to manufacture products precisely;
- Exploit the use of CAD/CAM equipment to manufacture products, increasing standards of quality, scale of production and precision;
- Apply a range of finishing techniques to wood components and products;
- Make use of specialist equipment to mark out materials;
- Use a broad range of material joining techniques including wood joints, mechanical fastenings and adhesives;
- Investigate and develop skills in modifying the appearance of materials.

Evaluation

Across KS3 pupils should:

- Test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups;
- Evaluate their products against their original specification and identify ways of improving them;
- Actively involve others in the testing of their products;
- Select appropriate methods to evaluate their products in use and modify them to improve performance;
- Produce short reports, making suggestions for improvements.

For illustration, this Scheme of Work has been mapped against the AQA new single title Design and Technology GCSE and A level GCE for first examining in 2019. However, it is equally relevant for the teaching of the other three Awarding Organisation's specifications of the same title, provided by Edexcel, OCR and Educas. The underpinning subject knowledge that is a requirement of these specifications is common across all of the mentioned Awarding Organisations.

AQA GCSE Design and Technology

AQA GCSE Design and Technology 8552.
GCSE exams June 2019 onwards. Version 1.0 12 January 2017

In addition to a common core, the GCSE must be delivered through at least one material category, one of which is timber based materials.

Materials

Students should know and understand the sources and origins of materials.

Developments in new materials

Students should be aware of developments in new materials, including:

- Classification of the types of properties of a range of materials;
- Selecting appropriate materials;
- Extracting information from technical specifications.

Materials and their working properties

Students should know and understand the categorisation of the types and properties of a range of materials including different wood species.

Hardwoods	Softwoods	Wood Based Panel Products
Ash	Larch	Medium Density Fibreboard (MDF)
Beech	Pine	Plywood
Mahogany	Spruce	Chipboard
Oak		
Balsa		

From having a thorough understanding of the different wood species, students will be able to make informed decisions when designing and making based upon the following:

- Classification of the types and properties of a range of materials;
- Selecting appropriate materials;
- Physical properties of materials related to use.

In relation to wood as a material category (not the specific materials identified), students should know and understand physical properties such as:

- Absorbency (resistance to moisture);
- Density;
- Fusibility;
- Electrical and thermal conductivity.

Students should also know and understand working properties such as:

- Strength;
- Hardness;
- Toughness;
- Malleability.

Specialist technical principles

In addition to the core technical principles, all students should develop an in-depth knowledge and understanding of the following specialist technical principles for wood-based materials:

- Selection of materials or components;
- Forces and stresses;
- Ecological and social footprint;
- Sources and origins;
- Using and working with materials;
- Stock forms, types and sizes;
- Scales of production;
- Specialist techniques and processes;
- Surface treatments and finishes.

Selection of materials or components

In the selection of materials or components, students should demonstrate how the following factors have been considered:

Functionality
- application of use, ease of working;

Aesthetics
- surface finish, texture and colour;

Environmental factors
- recyclable or reused materials;

Availability
- ease of sourcing and purchase;

Cost
- bulk buying;

Social factors
- social responsibility;

Cultural factors
- sensitive to cultural influence;

Ethical factors
- purchased from ethical sources.

Forces and stresses

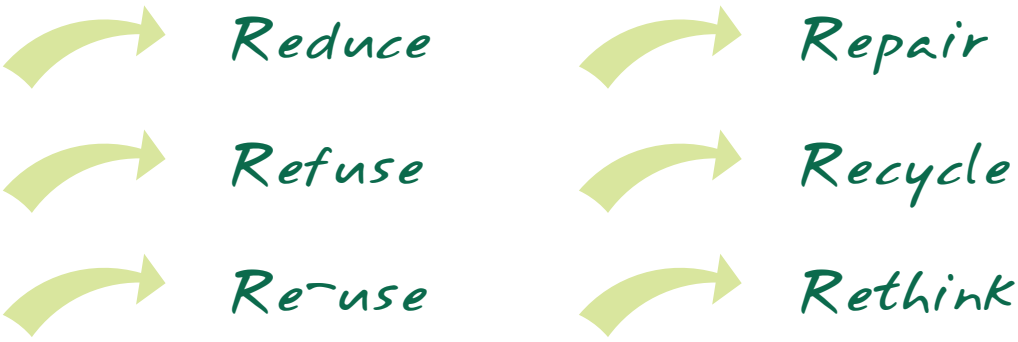
- Materials and objects can be manipulated to resist and work with forces and stresses - e.g. tension, compression, bending, torsion and shear.
- Students should know how materials can be reinforced, stiffened or made more flexible - e.g. lamination and bending.

Ecological and social footprint

Students should have a knowledge and understanding of the ecological and social footprint left by designers. These include:

- Deforestation;
- Manufacture;
- Distribution;
- User location;
- Final disposal;
- Production of carbon during the manufacture of products.

The six R's



Sources and origins

Students should know where timber comes from and how it is processed before use – i.e. an understanding of seasoning, conversion and creation of manufactured timbers.

Using and working with materials

Students must know and understand the physical and mechanical properties relevant to commercial products made from wood based materials, such as traditional wooden children's toys and flat pack furniture.

How to shape and form using cutting, abrasion and addition

Wood based materials - how to cut, drill, chisel, sand and plane.

Stock forms, types and sizes

Commercially available types and sizes of materials and components, including the following types of papers and boards:

- Sheet, roll and ply;
- Sold by size - e.g. A3, thickness, weight and colour;
- Standard components- e.g. fasteners, seals and bindings;
- Cartridge paper and corrugated card;
- Wood based materials – e.g. planks, boards and standard mouldings;
- Sold by length, width, thickness and diameter;
- Standard components - e.g. woodscrews, hinges, knock-down fittings;
- Calculation of material quantities and sizes;
- Calculate surface area and volume - e.g. material requirements for a specific use.

Specialist techniques and processes

How to use measurement/reference points, templates, jigs and patterns where suitable.

Tools, equipment and processes

To undertake a range of activities, such as:

Turning	Sawing	Milling
Drilling	Lamination	Bonding

How materials are cut, shaped and formed to a tolerance

Wood based materials - routing and turning.

The application and use of Quality Control to include measurable and quantitative systems used during manufacture

Wood based materials - dimensional accuracy using go/no go fixture.

Surface treatments and finishes

The preparation and application of treatments and finishes to enhance functional and aesthetic properties. For example:

Papers and boards
- printing, embossing and UV varnishing.

Wood based materials
- painting, varnishing and tanalising.

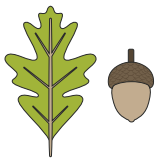
Designing and making principles

Students should know and understand that all design and technology activities take place within a wide range of contexts. They should also understand how the prototypes they develop must satisfy wants or needs and be fit for their intended use. For example, for use at home, school, work or leisure. They will need to demonstrate and apply knowledge and understanding of designing and making principles in relation to the following areas:

- Investigation, primary and secondary data;
- Environmental, social and economic challenge;
- The work of others;
- Design strategies;
- Communication of design ideas;
- Prototype development;
- Selection of materials and components;
- Tolerances;
- Material management;
- Specialist tools and equipment;
- Specialist techniques and processes.

Environmental, social and economic challenge

Students should have an understanding of how the following might present opportunities and constraints that influence the processes of designing and making:



- Deforestation;
- Possible increase in carbon dioxide levels leading to potential global warming;

- The need for fair trade;
- Selection of materials based on ethical factors and social and environmental footprints.

Design strategies

Students to generate imaginative and creative design ideas using a range of different design strategies. Examples of how this can be shown include:

- Sketching;
- Modelling;
- Testing.

Evaluation of their work to improve outcomes.

Communication of design ideas

Develop, communicate, record and justify design ideas using a range of appropriate techniques such as:

- Freehand sketching, isometric and perspective;
- 2D and 3D drawings;
- System and schematic diagrams;
- Annotated drawings that explain detailed development or the conceptual stages of designing;
- Exploded diagrams to show constructional detail or assembly;

Communication of design ideas continued:

- Working drawings, including 3rd angle orthographic, using conventions, dimensions and drawn to scale;
- Audio and visual recordings in support of aspects of designing: e.g. interviews with client or users;
- Mathematical modelling;
- Computer-based tools;
- Modelling – i.e. working directly with materials.

Prototype development

Design and develop prototypes in response to client wants and needs. Note the term prototype can be used to describe either a product or system.

Students will need to demonstrate how the development of prototypes:

- Satisfy the requirements of the brief;
- Respond to client wants and needs;
- Demonstrate innovation;
- Are functional;
- Consider aesthetics;
- Are potentially marketable.

Material management

- Cut materials efficiently and minimise waste.
- Use appropriate marking out methods, data points and coordinates.
- How to select and use specialist tools and equipment, including hand tools, machinery, digital design & manufacture, appropriate for the material and/or task to complete quality outcomes.
- How to use them safely to protect themselves and others from harm.

Specialist processes and techniques

- How to select and use specialist techniques and processes appropriate for the material and/or task and use them to the required level of accuracy to complete quality outcomes.
- How to use them safely to shape, fabricate and construct a high-quality prototype, including techniques such as wastage, addition, deforming and reforming.

AQA A-Level Design and Technology

AQA A-LEVEL DESIGN AND TECHNOLOGY PRODUCT DESIGN (7552)

The skills and knowledge set out below are taken from the AQA A-level Design and Technology: Product Design.
Those listed build on those already included in the previous GCSE specification. It does not represent an exhaustive list.

Materials and their applications

Students are expected to be able to name specific materials for a wide range of applications. They must also be able to provide detailed and justified explanations of why specific materials and combinations of materials are suitable for given applications, with reference to:

- Physical and mechanical properties (working characteristics);
- Product function;
- Aesthetics;
- Cost;
- Manufacture and disposal.

Classification of materials

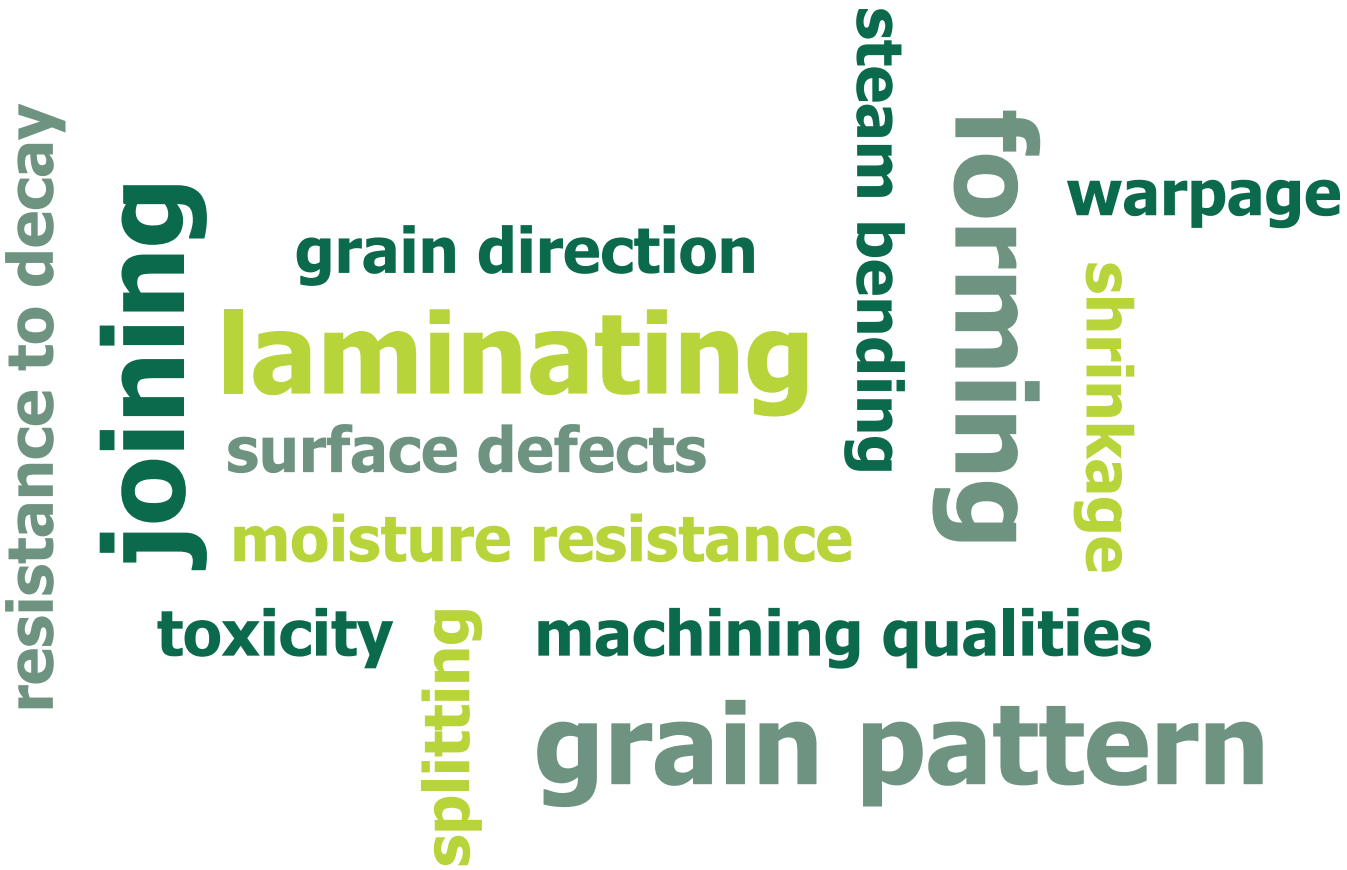
Students should know and understand the classifications of the following materials and be able to name examples that belong to each category of woods, including - hardwoods, softwoods, wood based panel products.

Performance characteristics of wood

Students should be aware of the different stock forms of wood, including:

Rough sawn	Planed square edge (PSE)	Planed all round (PAR)
Natural timber	Manufactured boards	Mouldings

Students should be able to describe the performance characteristics of woods, including:



Performance characteristics of wood continued:

Students should be familiar with the following woods and wood products:

Hardwoods	Softwoods	Wood Based Panel Products
Ash	Cedar	Aero Ply
Beech	Douglas fir	Chipboard
Birch	Larch	Flexible Plywood
Mahogany	Pine	Marine Plywood
Oak	Redwood	Medium Density Fibreboard (MDF)
Teak	Spruce	Melamine Formaldehyde Laminates
		Plywood
		Veneers

Composites

Students need to know and understand how materials are combined to make composites with enhanced properties. Students should be able to explain the suitability of composites for given application, making reference to relevant physical and/or mechanical properties, including:

- Ability to be moulded into a variety of 3D forms;
- Enhancement of physical and/or mechanical properties;
- Ease of manufacture for some uses against traditional materials;
- Improved product performance.

Students should be familiar with:

- Engineered wood – e.g. glulam (glued laminated timber).

Wood enhancement

Wood enhancement is the combining of natural woods with resins and lamination to give enhanced properties, such as increased strength and stability. Timber products can be enhanced with preservatives, finishes and coatings.

Wood processes

Students should be aware of how timber can be joined to form different products. They should be able to describe the different methods. They should be able to explain the suitability of the different joining methods for a range of specific products and scales of production including:

- Addition/fabrication processes;
- Traditional wood jointing - butt joint, rebate joint, housing joint, mitre joint, dowel joint, mortise and tenon;
- Component jointing - knock-down fittings, wood screws, nuts and bolts, coach bolts.

Students should be aware of how timber can be formed into 3D products. They should be able to describe the different processes. They should be able to explain the suitability of the different wasting processes for a range of specific products. Specific processes to include:

- Laminating;
- Steam bending;
- Machine processes - turning between centre, use of the chuck and faceplate, milling, routeing to produce slots, holes and profiles.

The use of adhesives and knock-down fittings

Poly Vinyl Acetate (PVA)	UV hardening adhesive
Contact adhesive	Epoxy resin

Wood finishing

Students should be aware of the ways that woods can be finished to enhance their appearance or prevent decay. Specific finishes to include:

- Applied finished - polyurethane varnish, acrylic varnish, water based paints, stains, colour wash;
- Wax finishes - Danish oil, teak oil;
- Pressure treating with chemical preservatives.

Production, planning and control (PPC) networking

Students should be aware of, and able to describe, the role of PPC systems in the planning and control of all aspects of manufacturing, including:

- Availability of materials;
- Scheduling of machines and people;
- Coordinating suppliers and customers.

Safe working practices

Students should be aware of, and able to explain, health and safety procedures related to products and manufacturing, including:

Knowledge of the Health and Safety at Work Act (1974), and how it influences the safe manufacture of products;

Control of Substances Hazardous to Health (COSHH) and safety precautions that should be taken with relevant materials;

Safe working practices and identifying potential hazards for the school workshop and industrial contexts;

Safe working practices and identifying potential hazards for the school workshop and industrial contexts;

Safety precautions that should be taken with specific manufacturing processes;

The concept of risk assessment and its application to given manufacturing processes.

Manufacture, repair, maintenance and disposal

Students should be aware of, and able to explain, the need to modify designs to make them more efficient to manufacture, including:

- Reducing the number of manufacturing processes;
- How the choice of materials affects the use, care and disposal of products;
- Making products easy to disassemble or separate;
- Application of the six Rs of sustainability;
- Reduce the quantity of materials, of toxic materials, of damaging materials and associated energy use;
- Rethink by using eco-friendly alternative materials;
- Recycle materials and/or components into new products;
- Maintenance;
- Temporary and integral fixings.

Design communication

Students should be aware of, and able to explain and demonstrate the skills, in a range of communication and presentation techniques for conveying proposals and intentions to clients, potential users and manufacturers, including:

- Report writing;
- The use of mixed media and rendering to enhance drawings;
- 2D/3D sketching;
- Dimensioning and details for manufacture.

Selecting appropriate tools, equipment and processes

Students should be aware of, and able to discuss and demonstrate, good and safe working practices, including:

- The importance of using the correct tools and equipment for specific tasks;
- The importance of ensuring their own safety and that of others when in a workshop situation;
- How designs are developed from a single prototype into mass produced products;
- The effect on the manufacturing process that is brought about by the need for batch and mass manufacture;
- How to select the most appropriate manufacturing process to be able to realise their own, or others', design proposals;
- The importance of health and safety in a commercial setting including workforce training and national safety standards.

Conservation of energy and resources

Students should be aware of, and able to discuss, the concept of a circular economy, including:

- How products are designed to conserve energy, materials and components;
- The design of products for minimum impact on the environment including raw material extraction, consumption, ease of repair, maintenance and end of life;
- Sustainable manufacturing including the use of alternative energy and methods to minimise waste;
- The impact of waste, surplus and by-products created in the process of manufacture including reuse of material off-cuts, chemicals, heat and water;
- Cost implications of dealing with waste;
- The impact of global manufacturing on product miles.

WOW I MADE THAT!
Project Brief

Your students need to research and design a product, identifying the type of raw materials used, considering sustainable design and investigating production processes. They must also show an understanding of environmental issues in the Wood and Furniture industries.

They should think about their product's target market and how it can appear on a shop floor. It could be sold in a large DIY chain, a garden centre, furniture store or hardware store.

They will need to select one of the following design briefs:

Design Brief 1

- Design and model a timber structure - such as building an extension to an existing property or build a bridge.

  The design should exploit the use of glued laminated timber as a building material. In the building environment, glued laminated timber is commonly known as Glulam or Cross Laminated Timber (CLT). Develop a design and produce visual representation through a CAD drawing or a scale model.

Design Brief 2

- Consider the layout of your school and explore the potential for creating an improved learning environment making the most of properties and characteristics of timber.
- Develop a design and produce visual representation through a CAD drawing or a scale model.

Design Brief 3

- Produce a creative and imaginative design solution for a wood-based piece of your choice - e.g. a piece of furniture or children's play equipment.
- Draw or produce a scale model considering the use of sustainable materials and an eco-friendly manufacturing process.

WOW I MADE THAT!
Project Requirements

It is expected that the activity will occupy between 6 and 12 hours of taught lesson time, extended by personal study/homework activity, depending on age group being taught.

Mood board

- A 'mood board' or sheet setting out the context for the product that the student is designing. This should be a single side of A3 and could contain, photographs, cuttings, sketches and notes.

Design ideas

- Design ideas – sketches and drawings showing how the students ideas developed and lead to their final design.

Photograph

- A photograph showing the students scale model used to present their design idea.

Evaluation

- An evaluation detailing the student's view of the design.

Note: Use the WOW I MADE THAT! handouts as required to support programme

Week 1

Learning objectives and outcomes	Resources
Objectives: • Introduce the the WOW I MADE THAT! programme. • Introduce wood and furniture industries. • Investigate career opportunities in those industries. • Show Oakworth video (5mins). • Introduce the terms 'sustainable design' and 'life cycle assessment'. • Begin completing the the WOW I MADE THAT! Student Workbook. **Outcomes:** • To be able to explain what the wood and furniture industries are and identify products and careers from those industries (see the WOW I MADE THAT! handouts). • To understand that successful sustainable design reduces the environmental impact throughout the products entire life (PowerPoint 1: What is Sustainable Design). • To understand that life cycle assessment is used to evaluate the environmental impact of a product through the following stages: selection of raw materials, manufacture, distribution, use and maintenance and disposal of the product (PowerPoint 1: What is Sustainable Design). • To apply the 5 stages of the life cycle assessment to either a given product or a product of the student's choice. **Student Workbook** • Students to complete the Design Brief and Project Analysis. • Complete the life cycle assessment of a product of the student's choice.	**Website:** All of the resources listed below are available for download from: www.wowimadethat.co.uk **Video Suggestion:** Oakworth video **Powerpoint 1:** Sustainable Design: Life Cycle Assessment **Student Workbook Worksheet 1:** Wood and furniture projects and users

Week 1 continued

Teaching and learning activities	Homework
• Teacher lead brainstorm of possible products and careers that fall into wood and furniture industries. • Use PowerPoint 1 to introduce the key focus of sustainable/ eco design. • Use PowerPoint 1 to discuss the environmental impact of products at each stage of the life cycle assessment. • Complete a life cycle assessment of a chosen product (class, group or individual activity). • Hand out student workbook. • Students choose the brief they would like to design and complete the Design Brief and Project Analysis.	Collect relevant images to inspire design work. Images of buildings, landscapes, nature etc. to draw inspiration from to help to shape and form design ideas. Consider a theme to base ideas on.

Week 2

Learning objectives and outcomes

Objectives:

- Students to be given an overview of possible materials they could use as part of their design ideas.

Timbers

- Classification of timbers.
- General properties of hardwoods and softwoods.
- Properties and commercial uses of pine, MDF, Chipboard.
- Natural timber production.
- Manufacture of particleboard (chipboard).
- Introduction of Glulam (GLT) and Cross laminated timber (CLT) and manufacturing Glulam.
- Experience of laminating.

Outcomes:

After studying natural timber each student will be able to:

- Classify timbers into softwoods, hardwoods and wood based panel products and give examples of each.
- Understand that a sustainable forest is a forest that is carefully managed to ensure that as trees are felled they are replaced with seedlings that eventually grow into new trees.
- Understand that trees are felled, converted and seasoned.
- Understand the glulam manufacturing process.
- Gain experience of laminating in groups.

Year 10 and above - additional outcomes

On completion of studies of wood based panel products each student will be able to:

- Understand that wood based panel products are made from processed timber.
- State the general advantages and disadvantages of wood based panel products.
- Give specific examples of commercial products made from manufactured boards.
- Outline the source of these materials (processed timber + recycling).

Student Workbook:

- Students to mount inspirational images and begin design ideas.

Resources

PowerPoint 2:
Natural timber production

Student Workbook Worksheet 2:
Classification of timbers

PowerPoint 3:
Particle board manufacture

Video suggestion:
Wood based panel products

Year 12 Student Workbook Worksheet 3:
Conversion and seasoning

Online Worksheet 5:
Wood based panel products – kitchen

Week 2 continued

Teaching and learning activities	Homework
Hour 1 • Use PowerPoint 2 to discuss the classifications of natural timber, the Forest Stewardship Council (FSC®) and PEFC give an overview of the production of timber. • Teacher lead brainstorm on the classifications of timber. • Students complete Student Workbook Worksheet 2: Classifications of timbers. • Students to start producing initial design ideas for their chosen product using 2D and 3D sketching techniques (30 mins). **Year 12** • Students to complete Student Workbook Worksheet 3: Conversion and seasoning. **Hour 2** • Watch video: Wood based panel products Or use PowerPoint 3: Particleboard manufacture, link in with sustainability issues. • Hands on experience of laminating in groups. **Year 12** • Students complete Online Worksheet 5: Wood based panel products – kitchen furniture.	Continue to develop and complete sketches outlining initial design ideas.

Week 3

Learning objectives and outcomes

Objectives:

- Students to produce a range of design ideas considering the environmental impact of their ideas, including the selection of raw materials, choice of manufacturing processes and disposal of their designs.
- Appreciate the joining techniques for natural woods.
- Demonstrate appropriate presentation techniques for their initial ideas.

Year 12

- Appreciate temporary joining techniques for wood based panel products (knock-down fittings).

Outcomes:

On completion of studying joining methods each student will be able to:

- Identify and explain the advantages and disadvantages of using a range of woodworking joints including halving, butt, rebate, housing, dowel and mortice and tenon joints in box and frame constructions.
- Students complete Student Workbook Worksheet 4: Wood Joints.

Year 12

On completion of studying knock-down fittings each student will be able to:

- Identify and explain the advantages and disadvantages of using corner block, leg plate, cam fitting and barrel nut & bolt fittings in box and frame constructions.
- Students complete Online Worksheet 6: Knock-down fittings.

Booklet:

- Complete a range (2-4) of design ideas.

Resources

Student Workbook Worksheet 4:
Wood joints

Year 12 Online Worksheet 6:
Knock-down fittings

Week 3 continued

Teaching and learning activities	Homework
Hour 1 • Teacher input on possible joining techniques for timbers that students could use in the manufacture of their designs. • Students complete Student Workbook Worksheet 4: Wood Joints. • Students to apply information about possible materials and process to design ideas. **Hour 2** • To complete the design ideas sheets. **Year 12** • Teacher input on possible knock-down fittings for manufactured board that students could use in the manufacture of their designs. • Students complete Online Worksheet 6: Knock-down fitting. • Students to apply information on materials and process to design ideas.	Complete design ideas.

Week 4 & 5

Learning objectives and outcomes

Objectives:

- To cover a range of appropriate presentation techniques for a final design proposal.

Year 10:

- To prepare modelling materials and present techniques that students can use to model their ideas.

Year 12:

- Orthographic projection for the production of working drawings with enough detail to enable a third person to manufacture the design.

Outcomes:

Booklet:

- To produce a presentation drawing of their developed final design annotated with key features including how the design will be produced using sustainable materials and a sustainable manufacturing process.

Year 12:

- To produce a dimension working drawing to enable a third person to manufacture the design.

Resources

Website:

www.wowimadethat.co.uk

Teaching and learning activities

Hour 1

- Teacher input on possible presentation techniques for final designs.
- Students to develop their final design and give details of materials, processes, and sustainable design issues addressed.
- Students to complete their final design.

Hour 2 - Year 10 and above:

- To complete the design ideas sheets.

Year 12

- Teacher input on possible knock-down fittings for wood based panel products that students could use in the manufacture of their designs.
- Students to apply information on materials and process to design ideas.

Homework

Complete final design.

Week 6: For Year 10 and Above

Learning objectives and outcomes

Objectives:

- Complete 3D model of final design for photographing.
- Complete booklet for submission.

Outcomes:

- Complete 3D model of final design.

Booklet:

- Mount photos of physical model or print renderings/print screens of CAD modelling.

Resources

Individual school to decide depth of modelling from CAD to card or light timber modelling.

Teaching and learning activities

Hour 1

- Card/CAD/Resistant materials modelling of design idea.
- Prepare materials.

Hour 2:

- Complete card model of final design.
- Photograph.

Homework

Complete student workbook and hand in next lesson.

Note: Tutors should use their professional judgement on the use of these resources and tailor resources where required to meet the requirements of the learner age group targeted.

All of the following assets are available for download from www.wowimadethat.co.uk

PowerPoint Presentations

- **PowerPoint 1:** What is Sustainable Design
- **PowerPoint 2:** Natural Timber Production
- **PowerPoint 3:** Particle Board Manufacture

Student Workbook Worksheets

- The following worksheets are found in the Student Workbook:
- **Student Workbook Worksheet 1:** Possible Furniture Projects and Users
- **Student Workbook Worksheet 2:** Classification of Timbers
- **Student Workbook Worksheet 3:** Conversion and Seasoning
- **Student Workbook Worksheet 4:** Wood Joints

Online Worksheets

The following worksheets are specifically for Year 12 activities and so have not been included in the Student Workbook. They are available to download separately from the website:

- **Online Worksheet 5:** Wood based Panel Products – Kitchen Furniture
- **Online Worksheet 6:** Knock-down Fittings

Online Handouts

- **Handout 1:** Career Progression Infographic
- **Handout 2:** Glossary of Furniture Terms
- **Handout 3:** Glulam Factsheet
- **Handout 4:** Particle Board Manufacture
- **Handout 5:** What is Engineered Timber
- **Handout 6:** Examples of Engineered Timber
- **Handout 7:** Timber Frame Construction
- **Handout 8:** Types of Engineered Floor Joists
- **Handout 9:** Floor Framing Details
- **Handout 10:** Cross Laminated Timber
- **Handout 11:** Structural Insulated Panels
- **Handout 12:** Glossary of Woodworking Terms
- **Handout 13:** Health and Safety at Work Act etc 1974
- **Handout 14:** Risk Assessment
- **Handout 15:** Risk Assessment Template
- **Handout 16:** Risk Rating
- **Handout 17:** Classification of Timbers

Supporting Videos

Oakworth Video: http://www.oakworthtimberengineering.co.uk/video-presentation.html

Wood based Panel Products: https://www.youtube.com/watch?v=qitenYvpSx4

Useful Links

British Woodworking Federation

The British Woodworking Federation (BWF) is the trade association for the woodworking and joinery manufacturing industry in the UK. The federation has over 700 members drawn from manufacturers, distributors and installers of timber doors, windows, conservatories, staircases, furniture, all forms of bespoke, interior and architectural joinery as well as suppliers to the industry.

https://www.bwf.org.uk

Timber Trade Federation

The Timber Trade Federation (TTF) is the UK's membership body for the timber supply chain. Their members constitute timber importers, merchants, agents and manufacturers and account for around two-thirds of the £10 billion UK timber industry.

https://ttf.co.uk

Wood for Good

Wood for Good is the timber industry's campaign to promote the use of wood in design and construction. Wood is nature's most versatile building material and modern engineering methods expand possibilities for its application beyond traditional uses. Their objective is to make wood a first-choice material for specifiers and designers by demonstrating what you can do with wood.

https://woodforgood.com

Wood Campus

Wood Campus is the UK wood industry's free information and learning site. Whether you're a specifier, a builder, working in a merchant's or into DIY, you'll find the information, inspiration and learning tools you need to use more wood – the most sustainable of materials.

https://www.woodcampus.co.uk

Go Construct

The Go Construct website showcases the many career opportunities available in construction and the built environment. The site helps to meet the future skills needs of the industry and to recruit a workforce that is diverse and ready for the challenge of the future. It aims to:

- Inspire people to consider a career in construction
- Allow people to discover what a career in construction is really like
- Allow people to experience the industry for themselves

Go Construct has been funded through the CITB Levy, meaning that the whole industry has contributed to its success and has ownership of the service - Go Construct is a campaign by industry, for industry.

https://www.goconstruct.org

Health and Safety Executive

The Health and Safety Executive (HSE) is the UK's national regulator for workplace health and safety. Its work involves prevention of work-related death, injury and ill health.

https://www.hse.gov.uk