



# STUDENT WORKBOOK

Name:

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Teacher:

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School:

Year:

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# 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 and learning groups, such as STEM clubs, and prison education programmes. Oriented towards project-based learning, WOW I MADE THAT! is mapped to the national curriculum and associated design and technology qualifications.**

The aim of the programme 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 possible future careers available within these industries. This project-based programme is intended to be taught any time during the academic year.

## About this Workbook

This book will guide you through the WOW I MADE THAT! programme. All of the associated resources needed to complete projects are available to download from the dedicated website:

[www.wowimadethat.co.uk](http://www.wowimadethat.co.uk)

However, your teacher might have decided to already print out what you need, so be sure to ask first.

*You will need to fill out a survey at the start of your project and at the end. Please ensure you complete both surveys.*

# WOW I MADE THAT! SURVEY

## Part 1

Please undertake this survey before starting your project.

How much do you know about the Wood and Furniture industries?



Loads



Quite a Lot



A little



Nothing at all

Is a career in the Wood and Furniture industries worth considering?



Yes

*If you ticked 'No' please tell us why:*



No

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Would you consider any of the following?



A career in the Wood and Furniture industries



Gathering more information on the Wood and Furniture industries



An apprenticeship in the Wood and Furniture industries



None of the above

What sort of career interests you at the moment and why?

1.

2.

3.

4.

5.

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# DESIGN BRIEF

## Research and design a product

Identify the type of raw materials used, considering sustainable design and investigating production processes. You must also show an understanding of environmental issues in the Wood and Furniture industries.

### You will need to select one of the design briefs below:

1. Design and model a timber structure (e.g. build an extension to an existing building or build a bridge). The design should exploit the use of Glued Laminated Timber, commonly known as Glulam, or Cross Laminated Timber (CLT) building material, as used in engineered wood industries and within the building environment. Develop a design and produce visual representation (e.g. CAD drawing or a scale model).
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 (e.g. CAD drawing or a scale model).
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) which will be made using sustainable materials and an eco-friendly manufacturing process. Think about your 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.

### What were your reasons when making your project choice?

Chosen product:

Purpose:

Target market:

# WORKSHEET 1

## Wood and Furniture Projects and Users

**Work as a class, in groups or as an individual to suggest as many items made from wood you could design for a wood and furniture project:**

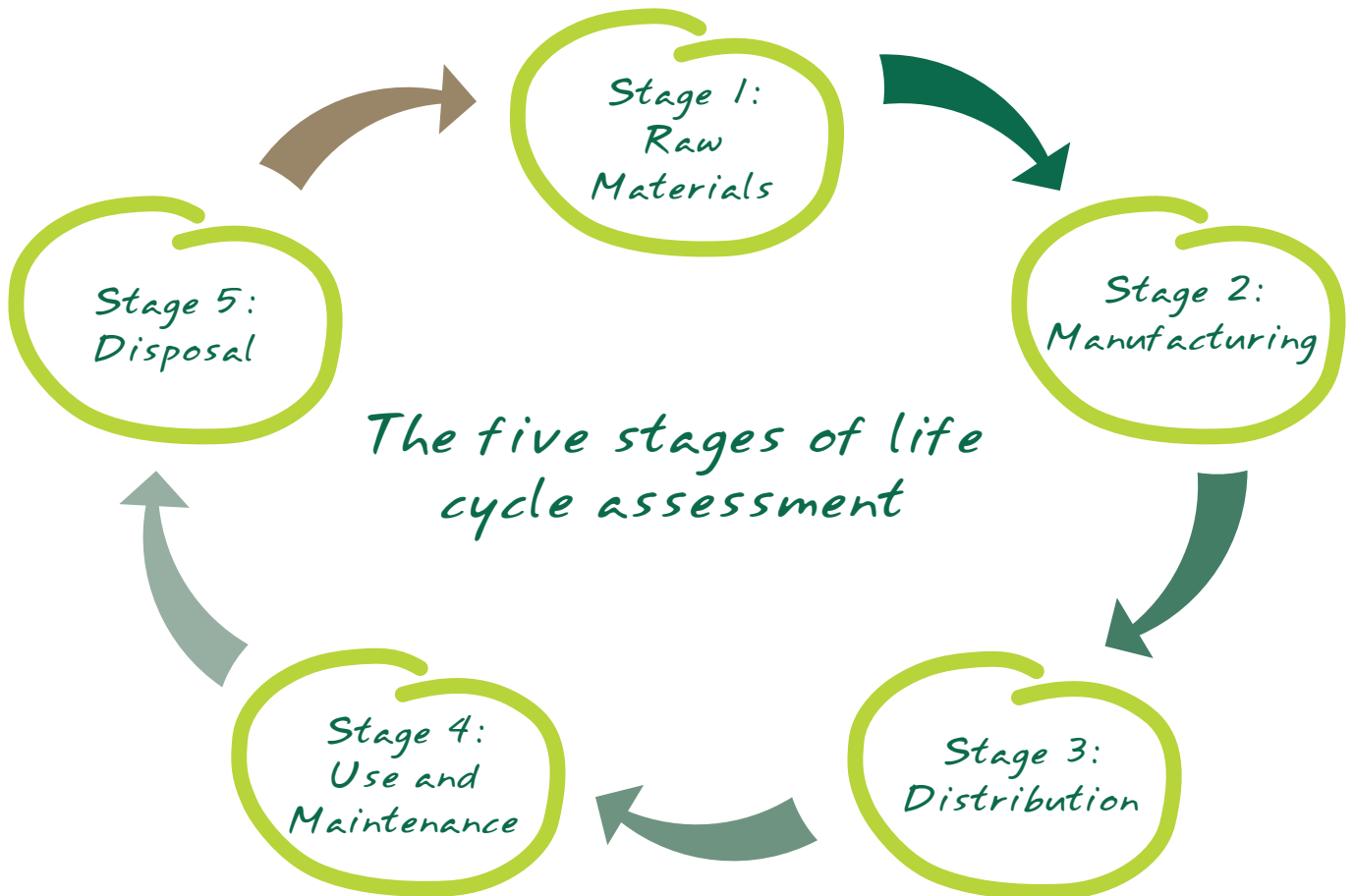
*Try and be as creative as you can!*

Product	User	Description

# STUDENT WORKBOOK

## Life Cycle Assessment

A Life Cycle Assessment helps to assess the environmental impact of a product from the start of its life until the time it is destroyed or recycled.



Select a product and consider each of the 5 stages of the Life Cycle Assessment to help evaluate the environmental impact of the product.

**Chosen product:**

Stage 1:  
Raw  
Materials

Stage 2:  
Manufacturing

Stage 3:  
Distribution

Stage 4:  
Use and  
Maintenance

Stage 5:  
Disposal

**Conclusion:**

If you were to redesign this product, state two things you would change to improve its environmental impact:

1

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2

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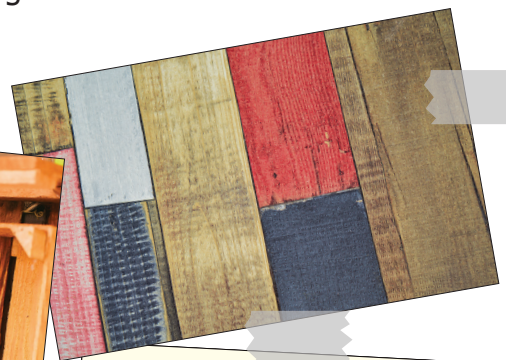
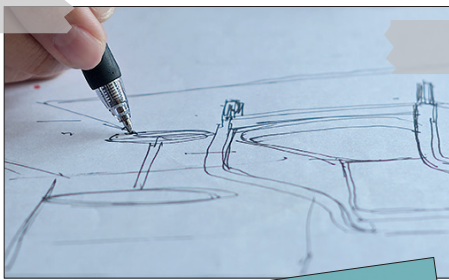
# STUDENT WORKBOOK

## Mood Board

### Help inspire your design ideas

Sometimes designers use "mood boards" to help them come up with ideas or moods for promotions or products. By looking at examples of similar products, and inspirational ideas, you can stimulate your imagination!

Start off by thinking about the key elements you have listed in your workbook and make some notes about other ideas that come into your head linked to those. Try and find some images that portray these ideas or draw your own and stick them all together.



**Please visit**

**[www.wowimadethat.co.uk](http://www.wowimadethat.co.uk)**  
**to download your A3 Mood Board sheet**

*- the Bigger the Better!*

*When your Mood Board is complete, ensure it is attached with your workbook*

# STUDENT WORKBOOK

## Materials Task - Material 1

[www.wowimadethat.co.uk](http://www.wowimadethat.co.uk)

Using the resources from the website choose a least two materials to research and record your findings below:

### Material 1 - Properties

List the mechanical and physical properties of the materials you may use.

### Material 1 - Sustainability

How is this made? Can it be recycled? Is it a renewable source?

# STUDENT WORKBOOK

## Materials Task - Material 2

[www.wowimadethat.co.uk](http://www.wowimadethat.co.uk)

Using the resources from the website choose a least two materials to research and record your findings below:

### Material 2 - Properties

List the mechanical and physical properties of the materials you may use.

### Material 2 - Sustainability

How is this made? Can it be recycled? Is it a renewable source?

# WORKSHEET 2

## Classification of Timbers

Use the word bank below to describe the properties of hardwoods and softwoods.

### Hardwoods

- Deciduous trees (leaf losing)
- Grow in cool temperatures
- Reach maturity in 100 years
- Expensive
- Closer grain
- Durable – generally more resistant to surface marking
- Deteriorate rapidly outside without protection

### Softwoods

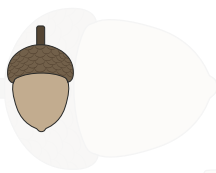
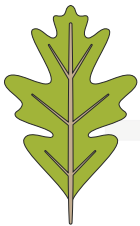
- Slow growing
- Generally heavier

- Reach maturity in 30 years
- Preferred for furniture production
- Coniferous trees (evergreen)
- Relatively cheap and easily replaced
- Commonly used as a veneer to reduce costs



*Exceptions:  
Tropical hardwoods  
retain their leaves  
and as a result  
grow faster!*

### 1. Describe hardwoods



## 1. Describe softwoods



### Useful information:

#### Disadvantages of natural woods:

- **Strong in one direction** – along the length of the grain
- **Shrinks** – humidity due to temperature change can cause twist, bow, warp and cracks
- **Knots** – where a branch intercepts the trunk
- **Rot** – can suffer from both dry rot and wet rot

#### Facts on manufactured boards:

- Issues with cost, availability, working properties and size of natural woods have all been factors in the need and use of manufactured boards
- Less likely to suffer from the disadvantages of natural woods
- No grain
- Strong in all directions
- Cheaper than natural woods
- Available in large standard sheets of uniform thickness and quality

# WORKSHEET 3 - Year 12 (Optional)

## Conversion and Seasoning

After studying conversion and seasoning of wood you should be able to complete the following:

### Hardwood and Softwood

Explain the difference between the structure of a hardwood and a softwood:

### Explain the following terms:

Felling:

Conversion:

Seasoning:

Using notes and diagrams, explain the following conversion methods:

Method	Slab sawn or through & through	Quarter sawn
Diagram of method		
Description of method		
Advantages		
Disadvantages		

**Explain why wood is seasoned:**

**Methods of seasoning:**

Natural Air Seasoning:

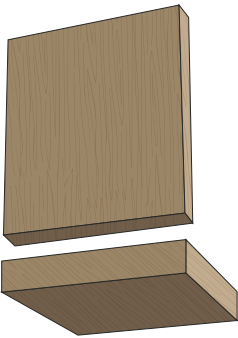
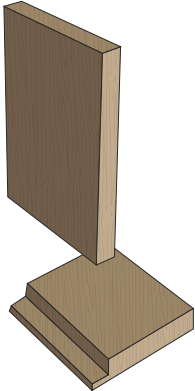
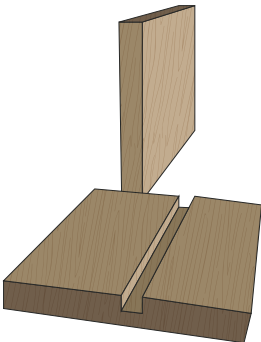
Artificial Kiln Seasoning:



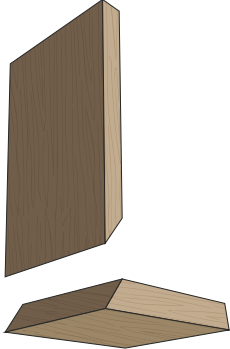
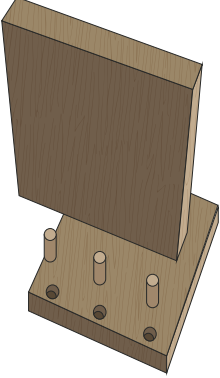
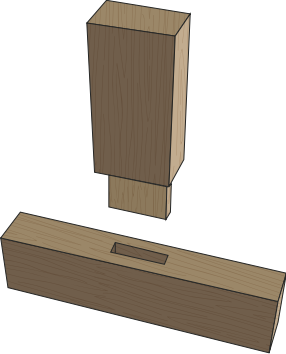
# WORKSHEET 4

## Wood Joints

Describe the range of common wood joints and make notes on their advantages, disadvantages, and identify where they are normally used:

Name and Picture	Notes	Uses
<p>Butt</p> 	<p>e.g.</p> <ul style="list-style-type: none"><li>• simple to cut</li><li>• weak as gluing end grain</li><li>• can see end grain</li></ul>	<p>e.g.</p> <ul style="list-style-type: none"><li>• drawer fronts in budget furniture</li></ul>
<p>Rebate</p> 		
<p>Housing</p> 		



Name and Picture	Notes	Uses
<p>Mitre</p> 		
<p>Dowel</p> 		
<p>Mortise and Tenon</p> 		

# STUDENT WORKBOOK

## Design Ideas

Using 2D and 3D presentation techniques produce a range of sustainable design ideas for your chosen product

Show your process of thinking through the design of your chosen products.



We are encouraging all students to think big and be as creative with your designs as you can, so please use as many of the provided design sheets as you need to stimulate thought and get your ideas flowing.

*Create a great product design through  
WOW I MADE THAT!*

**Please visit**

**[www.wowimadethat.co.uk](http://www.wowimadethat.co.uk)  
to download your A3 design  
idea sheets**

*- the Bigger the  
Better!*

*IT'S TIME TO  
GET CREATIVE!*

*Work on your  
design ideas.*

# STUDENT WORKBOOK

## Photos of Your Model

Attach a photograph of your model here:



If you were able to make a model - take a photograph of it!

# STUDENT WORKBOOK

## Final Design

Produce a presentation drawing of your final design, labelling main components and outlining chosen materials and possible manufacturing processes.

*It's time to get creative!*

1

Work on your design ideas.



2

Please visit  
[www.wowimadethat.co.uk](http://www.wowimadethat.co.uk)  
to download your A3 design idea sheets

*- the Bigger the Better!*

**WORK FREELY!**  
Create your final design on larger paper.



We are encouraging all students to think big and be as creative with your designs as you can, so please use as many of the provided design sheets as you need to stimulate thought and get your ideas flowing.

*Create a great product design through*  
**WOW I MADE THAT!**

# STUDENT WORKBOOK

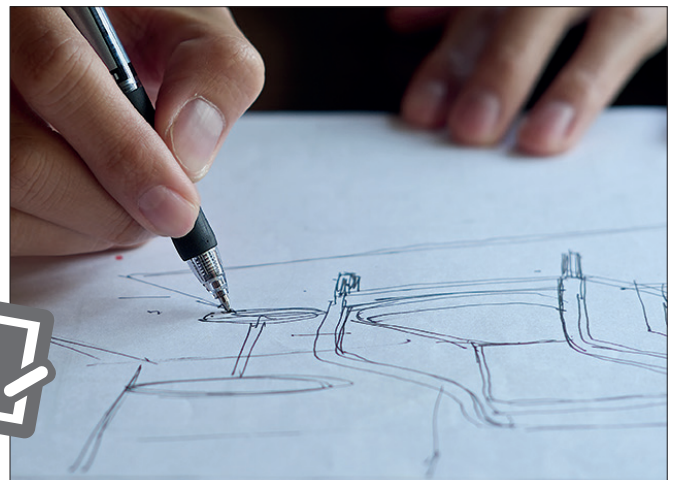
## Final Design - Year 12 Only (Optional)

Produce a detailed working drawing and cutting list of your final design with enough information to enable 3rd party manufacture.

Final design – working drawing. Suggested formats:



1. Dimensioned 3rd Angle Orthographic
2. Dimensioned Part Drawings
3. Dimensioned Exploded View



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Create a great product design through  
**WOW I MADE THAT!**

# STUDENT WORKBOOK

## Evaluate It!

*Evaluate your project by completing the questions below.*

### **Sustainable design**

Explain why your final design solution should be considered sustainable. Include relevant information about whether the chosen material is recycled or can be recycled:

## Finishing methods

Using the resources available at [www.wowimadethat.co.uk](http://www.wowimadethat.co.uk), identify two different methods that you could use to finish the product you have designed.

### Method 1

Why did you choose this method?

How would you apply this finish to your product?

### Method 2

Why did you choose this method?

How would you apply this finish to your product?



## Final design

Give reasons for selecting this idea as your final design proposal. Look back at the initial brief and specification. Does it meet the requirements?

Give a description of the materials most suitable for producing the product and explain your reasons and choice?

# WOW I MADE THAT! SURVEY

## Part 2

Please undertake this survey after finishing your project.

How much do you know about the Wood and Furniture industries?



Loads



Quite a Lot



A little



Nothing at all

Is a career in the Wood and Furniture industries worth considering?



Yes

*If you ticked 'No' please tell us why:*



No

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Would you consider any of the following?



A career in the Wood and Furniture industries



Gathering more information on the Wood and Furniture industries



An apprenticeship in the Wood and Furniture industries



None of the above

Do you associate any of the below with the Wood and Furniture industries?



An industry that is exciting



An industry that requires modern technology and skilled people



An industry that is versatile and dynamic



None of the above



An industry that is environmentally friendly

Which part of WOW I MADE THAT! have you enjoyed the most?

What would you do to change the WOW I MADE THAT! programme to make a career in the Wood and Furniture industries more appealing to students?

What are your ideas for the future of Wood and Furniture? How do you think the industries could emerge and advance?

*Thank you for  
taking part in  
our surveys!*

# WOW I MADE THAT!

## Project Checklist

### I completed the following sections:

Survey 1



Worksheet 3 Year 12 (Optional)



Investigating Wood



Design Ideas



Worksheet 1



Photos of your model (optional)



Life Cycle Assessment



Final Design



Mood Board



Final Design Year 12 (optional)



Materials



Evaluation



Worksheet 2



Survey 2



*Congratulations and thank you for participating in the WOW I MADE THAT! education programme.*

*Great Job!*