TEACHER'S PLANNING GUIDE

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GILL EDUCATION

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The paper used in this book is made from the wood pulp of managed forests.
For every tree felled, at least one tree is planted, thereby renewing natural resources.

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INTRODUCTION

Overview of Junior Cycle Wood Technology

Rationale and aims as outlined in the NCCA Junior Cycle Wood Technology Specification

Each subject of the technology suite offers the student different experiences that contribute towards their education in technology. As a result, preparing students for learning in the technology subjects is not just about teaching towards the technology but towards the skills that are fundamental to the technology subjects and are transferable into other areas of their learning. Skills that encourage the student to problem-solve through creation, innovation, communication, collaboration and exploration, all of which are developed in an active learning environment where students can advance their ideas from conception to realisation.

Wood Technology is a subject that will allow students to explore and learn about a key natural resource that nature has provided. Trees and wooden materials have a unique relationship with nature and humankind. The sustainable use and management of this natural resource is important as the world faces the challenges of the 21st century. From habitats to construction or recreation to oxygen creation this resource can play a significant role in the wellbeing of our planet. To this end it is important that citizens be given the opportunity to become knowledgeable about this resource, exploring its heritage and potential as a material for the future.

In Wood Technology, students will explore the natural and made world through the medium of design, seeking out opportunities to creatively and innovatively apply the material/resource in making and shaping their environment. Wood as a material resource has seen much innovation and change. Technological advances have created significant opportunities to expand the use of wood as a resource for a broad range of applications. However, the uniqueness of this material and craft is that many of the traditional applications and processes are still of value, transcending the test of time.

Learning in this subject will be active and student-centred, with learners collaborating in the pursuit of knowledge and in the safe management of the technology classroom environment. Through the challenges posed by the design-based philosophy of the subject, students will develop the relevant knowledge, skills and values to bring ideas from conception to reality in a way that will allow them to be expressive, creative and innovative.

The study of Wood Technology at Junior Cycle aims to:

- enable students to develop the necessary conceptual understanding, disciplinary skills and subject knowledge to design and create artefacts of value
- empower students through designing and making, while developing an awareness of sustainability and the use of natural resources
- develop a range of core design skills and relevant manipulation skills through modelling and processing wood and other materials
- develop the confidence and resilience of students through engagement with the uncertainty of design challenges
- encourage students' innovation and creativity through recognition and appreciation of their capacity to design and create.

Statements of Learning

There are 24 Statements of Learning in the Junior Cycle Framework. These should provide the basis for the design, plan and implementation of the school's Junior Cycle programme. Every school must ensure that all 24 Statements of Learning are evident in their planning across all of their Junior Cycle subjects and short courses.

The Statements of Learning that are most relevant to Wood Technology are:

- **SOL 15:** The student recognises the potential uses of mathematical knowledge, skills and understanding in all areas of learning.
- **SOL 19:** The student values the role and contribution of science and technology to society, and their personal, social and global importance.
- **SOL 20:** The student uses appropriate technologies in meeting a design challenge.
- **SOL 21:** The student applies practical skills as she/he develops models and products using a variety of materials and technologies.
- **SOL 23:** The student brings an idea from conception to realisation.
- **SOL 24:** The student uses technology and digital media tools to learn, work and think collaboratively and creatively in a responsible and ethical manner.

Key Skills

The Junior Cycle subjects and short courses also provide students with opportunities to develop a range of key skills. The eight key skills of the Junior Cycle are shown in the diagram below:

There are opportunities to support all key skills in this course. Some are particularly significant, such as 'Being Creative', in creating solutions to problem briefs, and 'Staying Well', through being safe in the Wood Technology classroom. Teachers should incorporate all eight key skills into their classroom planning.

Overview of the Specification

The specification for Junior Cycle Wood Technology focuses on developing students' understanding of, and skills in, the applications and impact of using wood as a resource in the world around them. Wood Technology uses an interdisciplinary approach, which encourages the integration of three interconnected contextual strands: **Principles and Practices**, **Design Thinking** and **Wood Science and Materials**.

Strand 1: Principles and Practices

In this strand, students learn about and employ the fundamental principles and practices associated with the study of Wood Technology. They learn to work safely and efficiently with equipment and materials, and apply principles of craft excellence through design and manufacture. They will investigate the environmental benefits and impacts of using wood as a natural and renewable resource and learn about sustainable practice.

Strand 2: Design Thinking

In this strand, students explore design briefs and their solutions. They use key principles of design and produce sketches, drawings, models/prototypes and artefacts that illustrate their design thinking. Students consider factors such as materials, cost, time resources and skills to produce purposeful, functional, appealing artefacts. They also consider the environmental and social impacts of design decisions and investigate how to minimise material use and manage waste.

Strand 3: Wood Science and Materials

In this strand, students explore the natural and physical properties and characteristics of wood. They learn how to use the natural aesthetics and properties of wood to enhance the appearance and function of artefacts. They explore the role of forestation and wood in terms of local/global ecology and sustainability and recognise the importance of considering the impact on the natural environment when sourcing materials.

Throughout each of the strands, the use of four elements – **Planning and Managing**, **Communicating**, **Creating**, and **Environment and Sustainability –** creates a framework for learning that ensures a coherent learning experience for the students.

Element 1: Planning and Managing

The Learning Outcomes in this element encourage students to develop a range of project management skills while evolving their designs to the creation stage. Students develop the necessary knowledge and skills that will enable them to effectively solve contextual problems.

Element 2: Communicating

The Learning Outcomes in this element encourage students to select and use appropriate media to communicate design ideas and technical information. Students will use technical language associated with wood science and technology. They learn about the important role that communication plays in addressing global and local environmental issues. Students will plan and narrate their design evolution, highlighting critical features of their solutions to design problems.

Element 3: Creating

The Learning Outcomes in this element encourage students to be creative and to explore ways in which they can apply their knowledge and skills and appreciate the practices needed to produce purposeful, functional, appealing artefacts. Students develop their creativity across the three strands

and use the natural aesthetics and properties of wood to enhance the appearance and function of their artefacts.

Element 4: Environment and Sustainability

The Learning Outcomes in this element encourage students to appreciate the environmental benefits and impacts of using wood as a natural and renewable resource, and to use sustainable practice throughout their learning. Students explore the role of forestation and wood in terms of global and local ecology and sustainability.

The Wood Technology specification aims to strike a balance between exploring the breadth of possibilities the study of the subject presents and providing opportunities for in-depth experiences of particular areas. The specification therefore allows for a certain amount of flexibility and freedom for teachers to facilitate learning in a way that reflects students' own choices, their curiosity and their creativity.

Learning Outcomes

Learning Outcomes are statements that describe what knowledge, understanding, skills and values students should be able to demonstrate, having studied Wood Technology in Junior Cycle. They represent outcomes for students at the end of their three years of study. The Learning Outcomes are applicable for three years and therefore the Learning Outcomes focused on at a point in time will not have been 'completed', but will continue to support the students' learning in Wood Technology up to the end of Junior Cycle.

From the Learning Outcomes, more focused **learning intentions** are co-created between teacher and students for a lesson or series of lessons. They describe what the teacher wants the students to value, understand and be able to do as a result of the learning and teaching activities.

Within each strand, the Learning Outcomes are numbered, which is intended to support teacher planning and does not imply a hierarchy of importance across the Learning Outcomes.

Strand 1: Principles and Practices

Elements	Learning Outcomes *Students should be able to:*
Planning and Managing	1.1 explore key elements required for the completion of tasks[1] 1.2 justify the selection of plans, processes and materials for the completion of tasks 1.3 collaborate effectively in a workshop learning environment 1.4 manage themselves and their resources
Communicating	1.5 represent key information graphically 1.6 create sketches and working drawings to recognised standards using a variety of media 1.7 explain the function and application of a range of tools, equipment, fixtures and fittings

Elements	Learning Outcomes *Students should be able to:*
Creating	1.8 apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.9 demonstrate principles of craft excellence through the design and realisation of tasks and artefacts[2] 1.10 apply recognised health and safety practices in the use of tools, equipment and materials
Environment and Sustainability	1.11 investigate the environmental impacts of using wood as a natural and renewable resource 1.12 appreciate sustainable practice throughout their learning

1 A task in this specification refers to any piece of work undertaken by students.

2 An artefact in this specification refers to a realised piece of work with a specific purpose or function.

Strand 2: Design Thinking

Elements	Learning Outcomes *Students should be able to:*
Planning and Managing	2.1 explore design problems 2.2 manage information and thinking to support an iterative design process 2.3 evaluate their own progress to inform future learning 2.4 understand key principles of design and ergonomics
Communicating	2.5 communicate relevant information 2.6 produce sketches, drawings and models/prototypes to explore design ideas 2.7 communicate a suitable approach to solving a problem 2.8 compile a folio through appropriate media
Creating	2.9 evolve their solutions based on critical reflection 2.10 devise templates and models using various media 2.11 produce purposeful, functional, appealing artefacts 2.12 create an artefact having considered factors such as materials, cost, time resources and skills
Environment and Sustainability	2.13 recognise the environmental and social impacts of design decisions 2.14 investigate how to minimise material use and manage waste

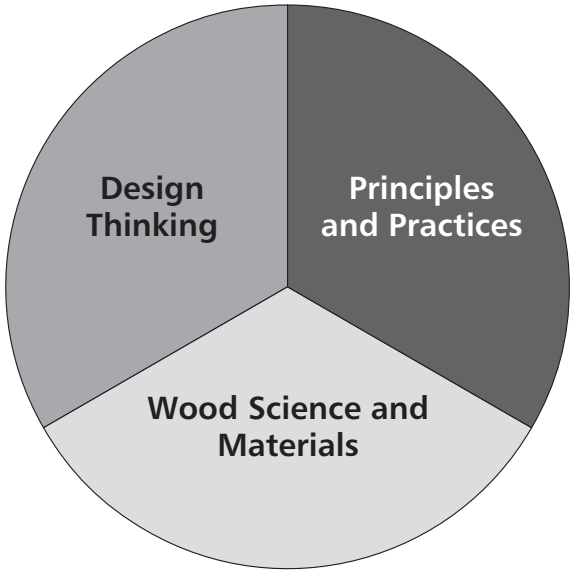
Strand 3: Wood Science and Materials

Elements	Learning Outcomes *Students should be able to:*
Planning and Managing	3.1 identify common species of wood 3.2 evaluate the characteristics and properties of common species of wood 3.3 understand the properties associated with a range of materials applicable to Wood Technology 3.4 evaluate the use of wood in comparison to alternative materials
Communicating	3.5 explain the properties associated with the classification of wood 3.6 discuss the use of wood in comparison to alternative materials 3.7 justify the use of materials based on characteristics and properties within a context
Creating	3.8 utilise the natural aesthetics and properties of wood to enhance the appearance and function of an artefact 3.9 create an artefact that demonstrates an understanding of the properties associated with a range of materials applicable to Wood Technology
Environment and Sustainability	3.10 appreciate the role of forestation and wood in terms of local/global ecology and sustainability 3.11 investigate the use of wood from forest to end use 3.12 consider the impact on the natural environment when sourcing materials

Action Verbs

Within the learning outcome there are important action verbs. These are crucial to the students' understanding of and engagement with the Learning Outcomes. The diagram below shows the action verbs that relate to each strand.

Explore
Manage
Evaluate
Understand
Communicate
Produce
Compile
Evolve
Devise
Create
Recognise
Investigate



Explore
Justify
Collaborate
Manage
Represent
Create
Explain
Apply
Demonstrate
Investigate
Appreciate

Identify	**Evaluate**	**Understand**
Explain	**Discuss**	**Justify**
Utilise	**Create**	**Appreciate**
Investigate	**Consider**	

Assessment

The Junior Cycle places a strong emphasis on assessment as part of the learning process. This requires a more varied approach to assessment, ensuring that the assessment method or methods chosen are fit for purpose, timely and relevant to the students. Assessment in Junior Cycle Wood Technology will optimise the opportunity for students to become reflective and active participants in their learning and for teachers to support this. Students should discuss success criteria, where their work-quality is judged by self, peer, and teacher assessment. Their learning is supported by this quality and focused feedback.

Success Criteria

Success criteria are linked to learning intentions. They are developed by the teacher and/or the student and describe what success looks like. They help the teacher and student to make judgements about the quality of student learning. Assessment is facilitated through the following:

Formative Assessment

The Junior Cycle is underpinned by the integration of formative assessment as a normal part of teaching and learning in classrooms. Formative assessment involves teachers and students reflecting on how learning is progressing and deciding next steps to ensure successful outcomes. A vital part of formative assessment is the feedback that teachers provide to their students. Through a range of assessment activities, the teacher helps the student to identify what has been achieved and where there is room for further learning and development. Teachers will place a greater emphasis on integrating assessment into their teaching, so they can better monitor students' progress in learning and identify how they can support students to reflect on and critically analyse their own learning.

Classroom–Based Assessments (CBA)

Classroom-Based Assessments are specific tasks set out in the subject specification, assessed by the teacher. CBA tasks are clearly described, from which the criteria support teacher judgement during assessment. The *features of quality* criteria, linked to each Classroom-Based Assessment, are used by teachers to assess the pieces of student work. Although the assessment is similar to the formative assessment that occurs every day in class, in the case of Classroom-Based Assessments the teacher's judgement is recorded for Subject Learning and Assessment Review (SLAR) Meetings, and, is used in the school's reporting to parents and students.

In Wood Technology there are two Classroom-Based Assessments:

CBA 1: Wood Science in our Environment

- Students explore a wood science-related issue within a local/global context. They analyse the information/data collected and evaluate and present the findings of their research (2nd Year, 1st Term).

CBA 2: Student Self–Analysis and Evaluation

- Students conduct an analysis of their coursework and skills to date in Wood Technology. They focus their analysis and evaluation on a range of completed tasks or on a specific task (3rd Year, 1st Term).

Final Assessment

These are the assessment components that are set and marked by the State Examinations Commission (SEC). In Junior Cycle Wood Technology, Final Assessment comprises the following two components:

Final Assessment	Weighting for examination (SEC assessed)
Project	70%
Written examination	30%

Introduction to the *Design Roots* Textbook Package

Junior Cycle Wood Technology is a problem-driven subject that allows students to make better sense of and value the world around them and to solve many of the problems they may encounter each day. Problems like: 'Why is it important to source wood from environmentally sustainable forests?' 'Where do design-based problems arise from?' 'How are designers inspired to think creatively?' 'How can we doodle, sketch and experiment with our design ideas?' and/or 'What is the principle that ensures I create a solution using safe and best practice?'

Integrated approach

The ***Design Roots*** textbook package emphasises an integrated approach to learning. It is structured around Units of Learning that are based around a choice of **problem-driven projects**. These projects guide and scaffold the students' learning and development, reinforced by the content and activities in the textbook and the Project and Activity Book.

Each Unit of Learning integrates Learning Outcomes from across the three strands of the specification – **Principles and Practices**, **Design Thinking** and **Wood Science and Materials**.

Using the *Design Roots* Textbook

Structure

At the beginning of the textbook we provide a list of the 'Problem-Driven Projects' as a reference. We suggest that students engage with one problem from each Unit of Learning.

Each chapter of the textbook is colour-coded by strand for easy reference. This colour-coding represents the strand that the chapter primarily focuses on. However, in keeping with the integrated approach, all chapters address Learning Outcomes from the three strands and four elements.

Learning Outcomes

At the start of each chapter the relevant Learning Outcomes from the specification are highlighted to guide teacher planning. Learning Intentions are also provided through 'You will be able to …' statements. These provide clear learning goals for the students. It is intended that each chapter will scaffold students' learning towards their learning expectations.

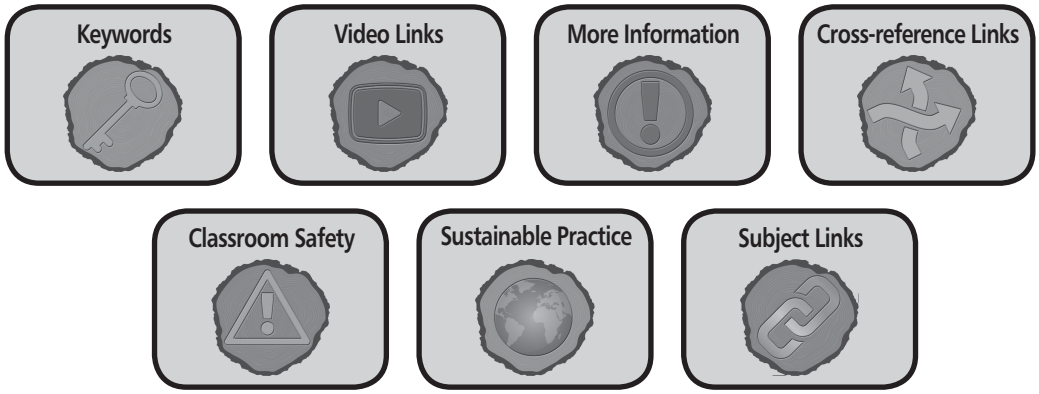
Key Skills

The textbook includes Key Skills activities that adopt active and student-centred learning methodologies derived from the Junior Cycle Strategies. Throughout the textbook, problem-driven learning tasks help students to develop the relevant knowledge, skills and values to bring ideas from conception to reality in a way that will allow them to be expressive, creative and innovative.

When you see the icons below, there will be an activity where students can practise that Key Skill:

Being Creative | **Being Literate** | **Being Numerate** | **Communicating** | **Managing Information and Thinking** | **Managing Myself** | **Staying Well** | **Working with Others**

Throughout the textbook there are other features that support students' learning and development, including:



Highly visual approach

The textbook represents a highly visual approach to learning, with frequent use of mind maps, fun cartoons, labelled diagrams and clear photographs. All of this is intended to engage students, aid visual learning and clearly illustrate techniques and processes.

End of Chapter Assessment

At the end of each chapter there is an End of Chapter Assessment. These provide further suggestions for active learning and useful means of checking student progress. These assessments were created in alignment with the Junior Cycle Strategies, and use a variety of these strategies to increase students' skillset, potential success and meet students' learning expectations.

Using the Project and Activity Book

It is intended that the textbook is used with the *Design Roots Project and Activity Book*. This book was written in line with the textbook and it allows students to further develop skills and explore the Learning Outcomes. It can be used in the classroom or as homework.

The book is split into two parts:

- The **Projects** section guides the student through each of the problem-driven projects, providing scaffolding for each stage of the design thinking process from need-finding to realisation.
- The **Activities** section provides further challenges to promote understanding of the material in each chapter of the textbook. It is an excellent revision aid for the final written examination.

Using this Teacher's Planning Guide

The Teacher's Planning Guide consists of four main sections:

- Units of Learning
- Schemes of Work
- Problem-Driven Projects
- Guidance on Assessment

Units of Learning

A Unit of Learning links Learning Outcomes, which clearly set out what the students should value, understand, and be able to do as a result of the learning and teaching activities within that unit.

We propose a series of Units of Learning that support students' learning and development in the context of the Junior Cycle Wood Technology Learning Outcomes. Within each Unit of Learning, we propose a range of problem-driven projects. We encourage teachers to choose one problem-driven project from each Unit of Learning to meet their students' learning and development needs. Each Unit of Learning integrates a problem-driven project with sections from the textbook chapters. Teachers can select and dip into relevant textbook chapter sections, to address their students' needs. All chapter links are outlined in the Units of Learning Overview on pp. 1–11 of this guide. It is worth noting that many of the chapter links reoccur across the Units of Learning so students will have plenty of opportunities to embed key learning.

Each Unit of Learning outlines:

- Age and stage of students
- Students' prior learning
- The learning to focus on
- Key learning for students
- How to assess student learning
- Learning experiences
- Reflection.

We have identified potential Learning Outcomes for each Unit of Learning. The proposed 10 Units of Learning cover all 38 Learning Outcomes from the Wood Technology specification. We have identified 12 fundamental Learning Outcomes (1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.10, 1.12, 2.1, 2.4, 2.5, 2.6, 2.11, 3.3, 3.9 and 3.12) which could be viewed as core learning for Wood Technology. These Learning Outcomes are **bold** in the Units of Learning for easy reference.

Schemes of Work

The Schemes of Work provide a chapter-by-chapter overview of the textbook and a Three-Year Plan.

The chapter-by-chapter overview details:

- Strands and Elements
- Learning Outcomes
- Action Verbs
- Learning Intentions
- Units of Learning
- Key Skills.

The Three-Year Plan is presented in the form of a Gantt chart for the three years of Wood Technology in the context of:

- A month-by-month timeline
- A Unit of Learning
- A problem
- Relevant *Design Roots* textbook chapters
- CBAs and Final Assessment.

Problem–Driven Projects

This section provides teachers with a complete cutting list for each problem-driven project.

Guidance on Assessment

At the end of this book you will find a section that provides detailed guidance on the Classroom-Based Assessments.

Using the Digital Resources

Design Roots is supported by a suite of digital resources, all easily accessible on **www.gillexplore.ie**, including:

- Editable Units of Learning and Three-Year Plan
- PowerPoint presentations
- SolidWorks files for the problem-driven projects
- Cutting lists for the problem-driven projects
- All of the video content and weblinks from the textbook.

UNITS OF LEARNING OVERVIEW

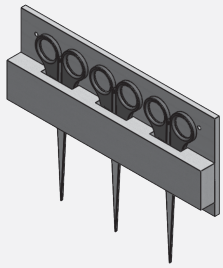
In ***Design Roots*** we propose a series of Units of Learning that support students' learning and development in the context of the Junior Cycle Wood Technology Learning Outcomes. Within each Unit of Learning, teachers are given a range of problem-driven projects. Teachers are encouraged to choose one problem from each Unit of Learning to meet their students' learning and development needs. Each Unit of Learning integrates a problem-driven project with sections from the textbook chapters. Teachers can select and dip into relevant textbook chapter sections, to address their students' needs. Many of the chapter links reoccur across the Units of Learning.

Year 1

Unit of Learning 1

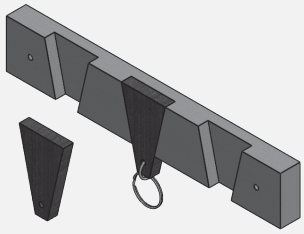
Problem 1: Scissors holder

Design and make an artefact to hold sharp scissors in the home. The holder should protect young family members from harm and be attractive in appearance.



Problem 2: Key holder

Design and make a key holder and keyrings for a family. The key holder and keyrings should be made from a range of alternative materials. The keyrings must display the family members' names.



Textbook Links

Chapter 1: Health and Safety – Be safe to prevent injury, For the process/practice, Safety considerations for the user

Chapter 2: Sketching – Doodling, Freehand sketching

Chapter 3: Drawing – Drawing equipment, Types of drawings, Isometric, Working drawing

Chapter 4: Design as Creative Problem-Solving – Solve problems for the user

Chapter 5: Exploration and Need-Finding – What is a problem?

Chapter 6: Discovery and Analysis – Use analysis to clarify the problem

Chapter 7: Research and Investigation – Research: Find information

Chapter 8: Idea Development – Doodling without critique, Changing your point of view

Chapter 9: Experimentation – What to test or experiment, Ways to experiment

Chapter 10: Evolution through Evaluation – How to evaluate, Need-finding

Chapter 11: Species of Trees – Main characteristic differences for identifying wood, Hardwood and softwood trees

Chapter 17: Manufactured Boards – Types of manufactured board, Plywood

Chapter 18: Hand Tools – Face-side; face-edge, Try square, Marking gauge, Tenon saw, Chisel, Hand drill

Chapter 19: Power Tools – Health and Safety with power tools, Drill

Chapter 21: Forces and Joints – Joining wood, Butt joint

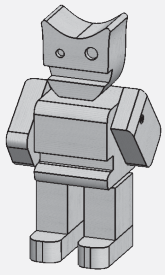
Chapter 22: Fixtures and Fittings – Screws

Chapter 30: Finishes – Why apply a finish?, Preparing a surface for an applied finish, Sandpaper, How to sand wood by hand or with an electric sander

Unit of Learning 2

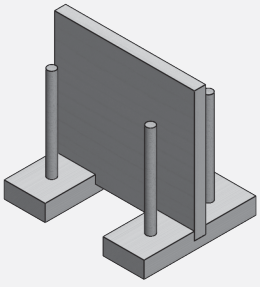
Problem 3: Mini robot toy

Design and make a mini robot toy to entertain a young child. The toy should be safe to use and its appearance should be enhanced through the use of recycled items.



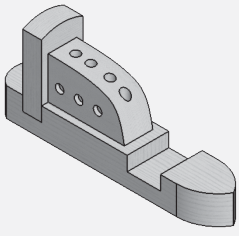
Problem 4: Letter organiser

Design and make a letter organiser for a kitchen setting in a family home. The holder should be able to separate new post and old post in an organised manner, and the two compartments or divisions should be distinct.



Problem 5: Pencil holder

Design and make a pencil holder with a vehicle theme for display on a desk. The holder should be aesthetically pleasing and stable.



Textbook Links

Chapter 1: Health and Safety – For the person, Personal protective equipment, Safety signs

Chapter 2: Sketching – Doodling, Freehand sketching

Chapter 3: Drawing – Isometric, Working drawing

Chapter 4: Design as Creative Problem-Solving – Solve problems for the world around us, Design like you care!

Chapter 5: Exploration and Need-Finding – Finding Problems

Chapter 6: Discovery and Analysis – Identify the requirements

Chapter 7: Research and Investigation – Research: Find information

Chapter 8: Idea Development – Working with others (brainstorming), Using random inputs, Being different, Flexibility

Chapter 9: Experimentation – Ways to experiment, Experimentation tips, Model

Chapter 10: Evolution through Evaluation – How to evaluate initial ideas

Chapter 11: Species of Trees – Common softwood trees, Common hardwood trees, Environment and sustainability

Chapter 17: Manufactured Boards – Plywood

Chapter 18: Hand Tools – Marking gauge, Tenon saw, Chisel, Spokeshave

Chapter 19: Power Tools – Health and Safety with power tools, Pyrography, Cordless drill

Chapter 20: Machines – Health and Safety with machines, Pillar drill

Chapter 21: Forces and Joints – Joining wood, Housing joint, Trenching, Butt joint, Dowel joint, Screw joint

Chapter 28: Alternative Materials – Sustainable use of alternative materials

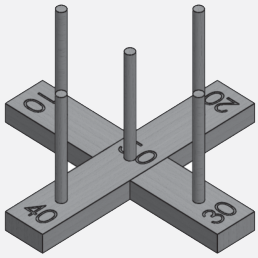
Chapter 29: Adhesives – Adhesives: common terms, Classroom safety, PVA (polyvinyl acetate)

Chapter 30: Finishes – Sandpaper, How to sand wood by hand or with an electric sander, Types of applied finishes – Varnish

Unit of Learning 3

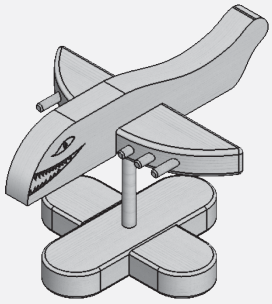
Problem 6: Child's game

Design and make a game to promote a young child's numeracy and motor skills. The game could be used on a horizontal or vertical surface. The game should include considerations for recycling.



Problem 7: Key holder

Design and make an artefact to hold a small number of keys. The artefact must be suitable for display on a mantelpiece or shelf. The design should be based on the form of a plane and be unique in design.



Textbook Links

Chapter 1: Health and Safety – Safety considerations for the user, Exclusion zone, Safety signs

Chapter 2: Sketching – How to sketch a 2D image using a grid

Chapter 3: Drawing – Isometric, Working drawing

Chapter 4: Design as Creative Problem-Solving – Solve problems for purpose

Chapter 5: Exploration and Need-Finding – Look with an observant eye

Chapter 6: Discovery and Analysis – Identify the essential things in a problem statement

Chapter 7: Research and Investigation – Where to research

Chapter 8: Idea Development – Using biomimicry

Chapter 9: Experimentation – Safety during experimentation, Model

Chapter 10: Evolution through Evaluation – How to evaluate analysis

Chapter 12: Growth and Structure of Wood – Life cycle of a tree, External parts of a tree, Internal parts of a tree, Cell structure of trees

Chapter 18: Hand Tools – Chisel, Coping saw, Spokeshave

Chapter 19: Power Tools – Cordless drill, Pyrography

Chapter 20: Machines – Pillar drill

Chapter 21: Forces and Joints – Joining wood, Halving joint, Dowel joint

Chapter 28: Alternative Materials – Comparing the properties of wood and alternative materials, Types of metals, Using metal as an alternative to wood

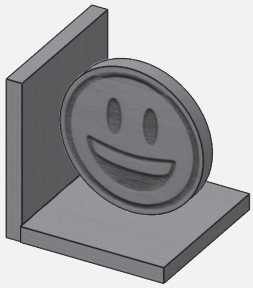
Chapter 29: Adhesives – Casein glue, Animal glue, Applying Adhesive

Chapter 30: Finishes – How to sand wood by hand or with an electric sander, Stains and dyes, Waxes, Lacquer

Unit of Learning 4

Problem 8: Book organiser

Design and make a book organiser to support books in a vertical orientation on a shelf or desk. An aspect of the organiser's design should reflect the theme of wellbeing.



Problem 9: Phone holder

Design and make an artefact to hold and display a smartphone. The artefact should be unique in design, compact and suitable for display on a shelf or desk. A suitable handcrafted joint should be an integral part of the project.

Textbook Links

Chapter 1: Health and Safety – For the materials

Chapter 2: Sketching – How to sketch a 3D object using crating

Chapter 3: Drawing – Oblique, Working drawing

Chapter 4: Design as Creative Problem-Solving – Appearance and aesthetics

Chapter 5: Exploration and Need-Finding – User

Chapter 6: Discovery and Analysis – Identify the essential things in a problem statement

Chapter 7: Research and Investigation – Research checklist, Investigate similar solutions and related products for sizing

Chapter 8: Idea Development – SCAMPER, Design Heuristics

Chapter 9: Experimentation – Model, Environmental and sustainable considerations

Chapter 10: Evolution through Evaluation – How to evaluate research

Chapter 13: Forests of Ireland and the World – Types of forests, Forests of Ireland, Managed or planted forest or woodland

Chapter 18: Hand Tools – Chisel, Tenon saw, Coping saw

Chapter 19: Power Tools – Pyrography, Cordless drill

Chapter 21: Forces and Joints – Joining wood, Finger joint, Dowel joint

Chapter 25: Carving – Hand tools for carving, Other carving tools, Relief carving

Chapter 26: Scrollwork – External cut

Chapter 27: Veneer Work – Veneer work, ground work, veneering tools, Tape and adhesives, Application (use), Marquetry

Chapter 28: Alternative Materials – Using metals: social and environmental impact

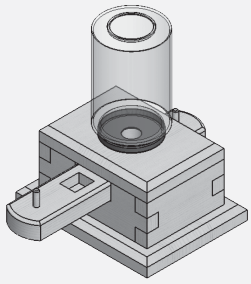
Chapter 29: Adhesives – Epoxy resin, Super glue, Hot melt glue, Applying adhesive

Chapter 30: Finishes – Preparing a surface for an applied finish, Paint

Unit of Learning 5

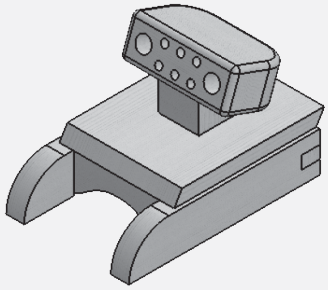
Problem 10: Sweet/Nut dispenser

Design and make an artefact to dispense sweets or nuts. The artefact should be easy to use and compact in design.



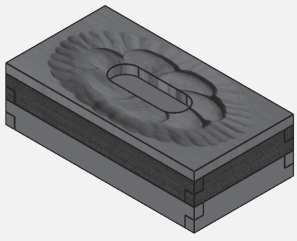
Problem 11: Pencil/Makeup brush holder

Design and make an artefact with a rotating holder to accommodate pencils or makeup brushes. The artefact should be compact, stable and suitable for use on a desk or table.



Problem 12: Tissue box cover

Design and make a tissue box cover for a side table in the entrance of a hallway in a house. The cover must be aesthetically pleasing and be enhanced by handcrafted joints.



Textbook Links

Chapter 1: Health and Safety – For the material

Chapter 2: Sketching – Freehand 3D sketching without the grid or crating techniques

Chapter 3: Drawing – Orthographic projection, Working drawing

Chapter 4: Design as Creative Problem-Solving – Approach to solving a real-world problem

Chapter 5: Exploration and Need-Finding – Look with an observant eye

Chapter 6: Discovery and Analysis – Identify the essential things in a problem statement

Chapter 7: Research and Investigation – Getting stuck

Chapter 8: Idea Development – Fixation

Chapter 9: Experimentation – Prototype

Chapter 10: Evolution through Evaluation – How to evaluate research

Chapter 13: Forests of Ireland and the World – Sustainable forest management, Stages in a planted or managed forest or woodland

Chapter 14: Trees and the Environment – Importance of trees for the environment, Deforestation and its causes

Chapter 18: Hand Tools – Marking gauge, Chisel, Tenon saw, Coping saw, Plane, Clamp

Chapter 19: Power Tools – Cordless drill, Sander

Chapter 20: Machines – Pillar drill, Scroll saw

Chapter 21: Forces and Joints – Finger joint, Housing joint

Chapter 24: Bending and Laminating – Solid wood curve

Chapter 25: Carving – Types of Carving, Materials and finishes suitable for carving

Chapter 28: Alternative Materials – Types of plastic, Using plastics in Wood Technology, Using plastics: social and environmental impact

Chapter 29: Adhesives – Synthetic adhesives, Applying adhesives

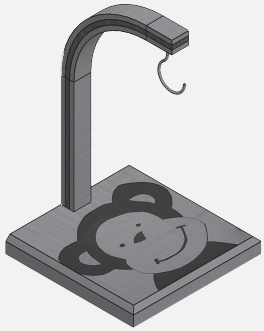
Chapter 30: Finishes – Preparing a surface for an applied finish, Varnish, Oil

Year 2

Unit of Learning 6

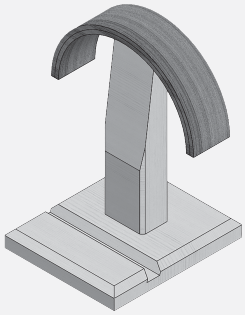
Problem 13: Fruit holder

Design and make a fruit holder for a family kitchen setting. The holder should incorporate a fixture or fitting to allow easy for hanging or holding fruit. The holder should incorporate a design of a character or keyword to motivate children to eat fruit.



Problem 14: Headphone holder

Design and make an artefact to hold and display a smartphone and a pair of headphones or earphones. The design should be stable and ensure easy access to the items.



Textbook Links

Chapter 1: Health and Safety – Engineering controls, Personal protective equipment (PPE)

Chapter 2: Sketching – Rendering

Chapter 3: Drawing – Orthographic drawing, Templates

Chapter 4: Design as Creative Problem-Solving – What is good design?

Chapter 5: Exploration and Need-Finding – Empathy

Chapter 6: Discovery and Analysis – Question the requirements

Chapter 7: Research and Investigation – Investigation, Manage the relevant information

Chapter 8: Idea Development – Using critical reflection to evolve solutions

Chapter 9: Experimentation – Prototype, Template

Chapter 10: Evolution through Evaluation – How to evaluate investigation

Chapter 14: Trees and the Environment – Effects of deforestation, Reducing deforestation

Chapter 15: Felling and Timber Conversion – Methods of conversion, Natural defects, Sustainable practice during felling and conversion

Chapter 17: Manufactured Boards – MDF, Pineboard, Flexiply, Health and safety with manufactured boards

Chapter 18: Hand Tools – Marking gauge, Chisel, Tenon saw, Plane

Chapter 20: Machines – Lathe, Mortise machine, Pillar drill, Bandsaw

Chapter 21: Forces and Joints – Mortise and tenon joint, Dowel joint, Housing joint, Finger joint

Chapter 22: Fixtures and Fittings – Nails, Knockdown fittings

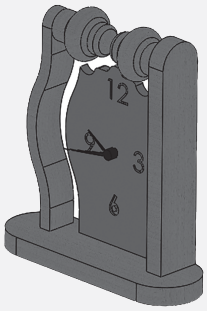
Chapter 23: Woodturning – Woodturning tools, Spindle turning

Chapter 24: Bending and Laminating – Laminating, making a former

Unit of Learning 6, *contd.*

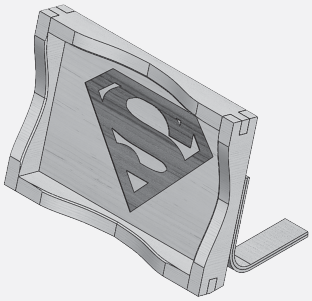
Problem 15: Clock display

Design and make a decorative artefact so one can read the time in a living room setting. The artefact should be suitable for display on a shelf or mantelpiece. The artefact should incorporate a range of handcraft skills.



Problem 16: Tablet support

Design and make an artefact to support a tablet while viewing content. The artefact should be attractive in appearance and demonstrate skilful handcraft in wood.



Textbook Links *contd.*

Chapter 25: Carving – Relief/Incised/Chip carving, Materials and finishes suitable for carving

Chapter 27: Veneer Work – Veneer work, Ground work, Veneering tools, Tape and adhesives, Application (use), Marquetry

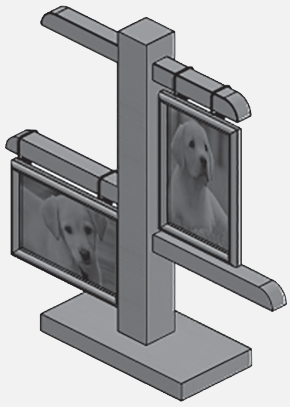
Chapter 28: Alternative Materials – Types of plastic, Using plastics in Wood Technology, Using plastics: social and environmental impact

Chapter 30: Finishes – Preparing a surface for an applied finish, Varnish, Oil, Waxes

Unit of Learning 7

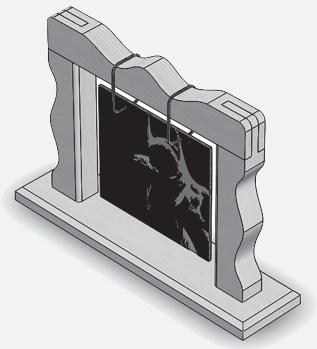
Problem 17: Photo frame holder

Design and make a stand which can hold multiple photo frames. The stand must be versatile to accommodate frames in various orientations; landscape or portrait. The stand must also incorporate recycled materials to hang the frames from.



Problem 18: Photo frame

Design and make a frame to display a photograph or a design demonstrating your skill in veneering or pyrography. The frame should be elegant in appearance and suitable for display on shelf or table.



Textbook Links

Chapter 1: Health and Safety – Personal protective equipment, Safety signs

Chapter 2: Sketching – Texture

Chapter 3: Drawing – Orthographic projection

Chapter 4: Design as Creative Problem-Solving – What is good design?

Chapter 5: Exploration and Need-Finding – Who benefits when a problem is solved?

Chapter 6: Discovery and Analysis – Question the requirements

Chapter 7: Research and Investigation – Justify the relevant information

Chapter 8: Idea Development – Checking against criteria, Pros and cons

Chapter 9: Experimentation – Prototype

Chapter 10: Evolution through Evaluation – How to evaluate developed design ideas

Chapter 16: Timber Seasoning: Reasons for seasoning, Methods of seasoning, Seasoning defects

Chapter 17: Manufactured Boards – OSB, Chipboard

Chapter 18: Hand Tools – Chisel, Mallet, Tenon saw, Coping saw

Chapter 19: Power Tools – Cordless drill, Sander, Transformer, Router, Domino joiner

Chapter 20: Machines – Mortise machine, Bandsaw

Chapter 21: Forces and Joints – Housing joint, Mortise and tenon joint, Bridle joint

Chapter 27: Veneer Work – Marquetry, Parquetry inlay, finishing

Chapter 28: Alternative Materials – Types of plastic, Using plastics in Wood Technology, Using plastics: social and environmental impact

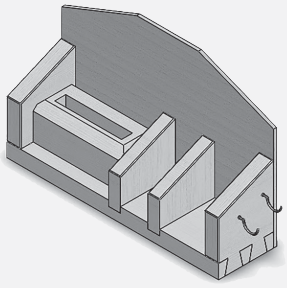
Chapter 29: Adhesives – Synthetic adhesives, Applying adhesives

Chapter 30: Finishes – Preparing a surface for an applied finish, Varnish, Oil, Stains and dyes

Unit of Learning 8

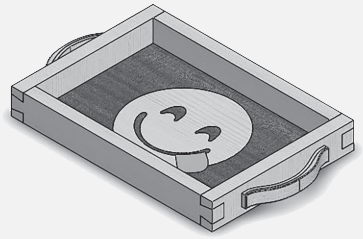
Problem 19: Personal items storage

Design and make an artefact to store and display a small number of personal items. The artefact should be designed to be wall mounted and incorporate distinct spaces to ensure neat organisation. A suitable handcrafted joint should be an integral part of your design.



Problem 20: Portable tray

Design and make a tray suitable for carrying cups, plates, bowls and other tableware. The artefact should be easy to carry and attractive in appearance.



Textbook Links

Chapter 1: Health and Safety – Safety considerations for the user

Chapter 2: Sketching – Using colour

Chapter 3: Drawing – Orthographic projection

Chapter 4: Design as Creative Problem-Solving – What is good design?

Chapter 5: Exploration and Need-Finding – Initial ideas

Chapter 6: Discovery and Analysis – Keep recording your initial ideas

Chapter 7: Research and Investigation – Report the information, Lists

Chapter 8: Idea Development – Ten principles of good design

Chapter 9: Experimentation – Model, Prototype, Template

Chapter 10: Evolution through Evaluation – How to evaluate using experimentation

Chapter 17: Manufactured Boards – Plywood, Advantages of manufactured boards

Chapter 18: Hand Tools – Sliding bevel, Tenon saw, Dovetail saw

Chapter 19: Power Tools – Cordless drill, Sander, Transformer, Router

Chapter 20: Machines – Mortise machine, Bandsaw

Chapter 21: Forces and Joints – Housing joint, Mortise and tenon joint, Dovetail joint

Chapter 24: Bending and Laminating – Laminating, making a former

Chapter 27: Veneer Work – Marquetry, Parquetry

Chapter 28: Alternative Materials – Types of metal, Using metal as an alternative to wood, Using metals: social and environmental impact

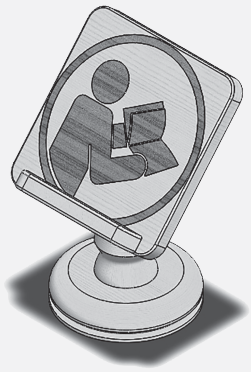
Chapter 29: Adhesives – Synthetic adhesives, Applying adhesives

Chapter 30: Preparing a surface for an applied finish, Varnish, Oil, Stains and dyes

Unit of Learning 9

Problem 21: Support stand

Design and make an artefact to hold and display an open book, magazine or tablet device. The artefact should be suitable for display on a desk or table and incorporate a range of handcraft skills.



Textbook Links

Chapter 1: Health and Safety – Safety considerations for the user, PPE

Chapter 2: Sketching – Tracing paper

Chapter 3: Drawing – Orthographic projection, Working drawing

Chapter 4: Design as Creative Problem-Solving – Self-reflection: You as a problem-solver in Wood Technology

Chapter 5: Exploration and Need-Finding – Initial ideas

Chapter 6: Discovery and Analysis – Analysis; Initial ideas

Chapter 7: Research and Investigation – Report the information; Mood boards

Chapter 8: Idea Development – Asking questions, Tests and try-outs

Chapter 9: Experimentation – Computer-Aided Design

Chapter 10: Evolution through Evaluation – How to evaluate the realisation

Chapter 14: Trees and the Environment – Effects of deforestation, Reducing deforestation

Chapter 17: Manufactured Boards – Pineboard, Blockboard

Chapter 18: Hand Tools – Striking tools, Clamp

Chapter 19: Power Tools – Cordless drill, Domino joiner, Biscuit joiner

Chapter 21: Forces and Joints – Dowel joint, Screw joint, Dovetail joint

Chapter 23: Woodturning – Spindle turning, Spigot and socket joint, Health and safety (PPE)

Chapter 27: Veneer Work – Marquetry, Parquetry

Chapter 28: Alternative Materials – Types of Metal, Using metal as an alternative to wood, Using metals: social and environmental impact

Chapter 29: Adhesives – Synthetic adhesives, Applying adhesives

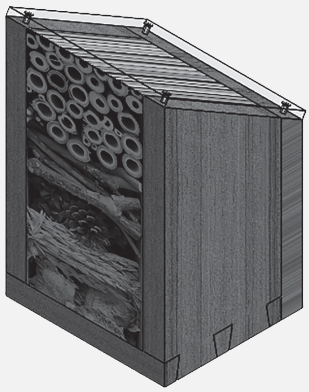
Chapter 30: Finishes – Preparing a surface for an applied finish, Varnish, Oil, Stains and dyes

Year 3

Unit of Learning 10

Problem 22: Bug hotel

Design and make a bug hotel to promote biodiversity in a school garden or local community setting. The bug hotel must include a range of recycled materials suitable to attract a range of bugs. The finish on the bug hotel must ensure the bug hotel is sustainable in an outdoor setting.



Textbook Links

Chapter 1: Health and Safety – Health and safety considerations when designing for children

Chapter 2: Sketching – Using colour

Chapter 3: Drawing – Orthographic projection, Working drawing

Chapter 4: Design as Creative Problem-Solving – Sustainability, Diversity

Chapter 5: Exploration and Need-Finding – Need-finding

Chapter 6: Discovery and Analysis – Analysis, Initial ideas

Chapter 7: Research and Investigation – Thorough research, Critical investigation

Chapter 8: Idea Development – Iteration and evolution of creative design ideas

Chapter 9: Experimentation – CAD, Reflection: How to know what to experiment or test?

Chapter 10: Evolution through Evaluation – Evaluation

Chapter 14: Trees and the Environment – Effects of deforestation, Reducing deforestation

Chapter 17: Manufactured Boards – Marine, Plywood

Chapter 18: Hand Tools – Dovetail saw, Screwdriver

Chapter 19: Power Tools – Cordless drill, Domino joiner, Biscuit joiner

Chapter 21: Forces and Joints – Dowel joint, Dovetail joint, Biscuit joint, Domino joint

Chapter 28: Alternative Materials – Types of plastic, Using plastics in Wood Technology, Using plastics: social and environmental impact

Chapter 29: Adhesives – Synthetic adhesives, Applying adhesives

Chapter 30: Finishes – Preparing a surface for an applied finish, Varnish, Oil

UNIT OF LEARNING 1

Age and Stage of Students

Age/Stage	12 to 13/First Year
Suggested Months	August to September
Suggested Duration	3 to 4 weeks

Students' Prior Learning

From their Primary Curriculum:

- Nature: Types/Species of trees; conifers/softwoods
- Doodling from Art

Other:

- Some students may have experience of woodcraft skills from home, or Maker Spaces.
- May know about the general health and safety issues for young children; sharp edges, etc.
- The size/proportions of related items/components (scissors/key-ring) from general use

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 1: Scissors holder	Design and make an artefact to hold sharp scissors in the home. The holder should protect young family members from harm and be attractive in appearance.
Problem 2: Key holder	Design and make a key holder and keyrings for a family. The key holder and keyrings should be made from a range of alternative materials. The keyrings must display the family members' names.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	**1.3**, **1.4**, **1.5**, **1.7**, **1.8**, **1.10**, **1.12**	**1.7**, **1.8**	Apply, Explain
Strand 2 Design Thinking	**2.1**, **2.4**, **2.5**, 2.6, **2.11**, 2.13	2.13	Recognise
Strand 3 Wood Science and Materials	3.1, **3.3**, 3.4, 3.6, **3.12**	3.1, 3.4, 3.6	Identify, Discuss, Evaluate

Wellbeing Indicators: Active, Responsible, Resilient, Respected, Connected

Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.8, **1.7**	• Knowledge of the world around them to recognise a need. • Initial ideas captured via doodling and freehand sketching. • Analyse the problem statement to understand the design principles and thus the problem criteria. • Identify safety in the context of the user and their ergonomics (hand). • Apply research skills to determine sizes relevant to the problem criteria, forces and joints in the context of Trenching, and Butt joint. • Evolve their creative ideas through reflection on their model and initial ideas. • Read and apply a working drawing to their material. • Explain and apply safe practice when creating an artefact using alternative materials by applying hand tools (Marking Gauge, Tenon Saw, Paring Chisel) and surface preparation, and applied finish.	• Identify the user need in the context of the problem given. • Understand safety for the user through understanding ergonomics (hand size to product). • Communicate ideas through doodles, sketches and models of their ideas. • Demonstrate a best practice approach to produce a design from a working drawing. • Apply safe and accurate practice with marking out tools, hand tools (tenon saw and paring chisel), adhesives, finishing and finishes.
2.13	Produce a model using ***recycled*** cardboard. Recognise the sustainability of manufactured boards; focusing on plywood.	Minimise waste and use recycled materials when modelling.
3.1	Identify the various species of trees; softwoods and hardwoods.	Identify the common tree species; softwoods and hardwoods.
3.6	Discuss wood versus manufactured boards; focusing on plywood.	Natural wood versus manufactured boards; plywood.
3.4	Evaluate wood versus manufactured boards; focusing on plywood.	Investigation and involvement in a discussion on the sustainability of wood versus manufactured boards (plywood).

Learning Experiences

- Bug list activity for need-finding
- Doodling initial ideas
- Train of thought activity to support analysis of problem statement
- Mind-map of keywords from problem statement; understand the problem
- Model-making while appreciating the importance of minimising waste through recycling
- Poster creation identifying and evaluating tree species; softwoods and hardwoods
- Kahoot! quiz on manufactured boards – plywood
- Verbal questions for working drawing comprehension; numeracy and literacy
- Safety check-list or stop and jot
- Accuracy and safe practice in marking out, processing trenches, surface preparation, and applying a suitable finish
- Student reflection on their learning experience and personal goals

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 2

Age and Stage of Students

Age/Stage	12 to 13/First Year
Suggested Months	October to November
Suggested Duration	5 to 7 weeks

Students' Prior Learning

From their Primary Curriculum:

- Nature: How a seed grows; types of trees
- Upcycling from Art
- Green Flag initiatives

Prior Learning from UoL 1:

- Need-finding
- Initial ideas via doodling and freehand sketching
- Analysing a problem statement
- Identifying safety – the user and their ergonomics (hand)
- Research skills
- Evolving their creative ideas
- Modelling using recycled cardboard
- Reading and applying a working drawing
- Explaining and applying safe practice
- Joint: trenching, and butt joint
- Hand tools (marking gauge, tenon saw, paring chisel)
- Sustainability of manufactured boards; plywood
- Softwoods

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 3: Mini robot toy	Design and make a mini robot toy to entertain a young child. The toy should be safe to use and its appearance should be enhanced through the use of recycled items.
Problem 4: Letter organiser	Design and make a letter organiser for a kitchen setting in a family home. The holder should be able to separate new post and old post in an organised manner, and the two compartments or divisions should be distinct.
Problem 5: Pencil holder	Design and make pencil holder with a vehicle theme for display on a desk. The holder should be aesthetically pleasing and stable.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	1.1, **1.2**, **1.3**, **1.4**, **1.5**, 1.6, **1.7**, **1.8**, 1.9, **1.10**, 1.11, **1.12**	**1.8**, 1.10	Apply
Strand 2 Design Thinking	**2.1**, 2.2, 2.3, **2.4**, **2.5**, **2.6**, 2.7, 2.8, 2.9, 2.10, **2.11**, 2.12, 2.13, 2.14	**2.4**, **2.6**, 2.14	Understand, Produce, Investigate
Strand 3 Wood Science and Materials	3.1, 3.2, **3.3**, 3.4, 3.6, 3.10, **3.12**	3.1, 3.2	Identify, Evaluate

Wellbeing Indicators: Active, Aware, Responsible, Respected

Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
2.4	• Key principles of design; investigate the world around them to identify a need (child safety/function). • Reflect on design activities and learning.	• Need-finding by understanding and identifying a user need and user safety. • Reflection on a completed artefact; a solution to the problem criteria especially the user needs.
2.6	• Evolve their creative ideas through reflection on their initial and developed ideas. • Model ideas using recycled cardboard. • Read and apply a working drawing to their material.	• Communication of ideas; doodles, sketches, mind maps and models of their ideas. • Explore a design from a working drawing.
2.14	• Make considered decisions through recycled material use. • Sustainability of manufactured boards; plywood. • Minimise material use in artefact realisation.	• Evidence of environmental sustainability in the context of minimising waste and using recycled materials (cardboard for modelling). • Investigate the sustainability of manufactured boards; understanding of what makes a material like plywood sustainable.
3.1	• Various species of trees; Softwoods and Hardwood	• Identify the common tree species; Softwoods and Hardwood identification of common tree species from sample or picture of leaves, seed and trees.
3.2	• Various species of trees characteristics and properties; Softwood versus hardwood.	• Evaluate the common tree species; Softwood versus Hardwood. • Express an understanding and ability to evaluate the properties and uses of woods from common species of trees.
1.8	• Principles of forces in joint design. • Processes and techniques for trenching, butt joint, housing joint, dowel joint, screw joint.	• Explanation of the forces for joint design. Accurate and safe best practice in processing a trench, butt joint, dowel joint, screw joint.
1.10	• Health and Safety; Safety for user. Safe practice with hand tools (marking gauge, chisel, tenon saw, spokeshave), power tools (cordless drill, pyrography pen) and machines (pillar drill), surface preparation and applied finish (varnish).	• Safety considerations for the relevant hand tools, equipment, adhesives. • Accurate and safe application of saws and chisels, adhesives and finish (varnish).

Learning Experiences

- Bug list activity for need-finding
- Train of thought activity to support analysis of problem statement
- Poster creation identifying and evaluating tree species
- Kahoot! quiz on manufactured boards – plywood
- Safety check-list
- Verbal questions for working drawing comprehension
- Accuracy and safe practice in marking out, processing and finishing
- Student reflection on their learning experience and personal goals

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 3

Age and Stage of Students

Age/Stage	12 to 13/First Year
Suggested Months	December to January
Suggested Duration	5 to 6 weeks

Students' Prior Learning

From their Primary Curriculum:

- Nature: How a seed grows; types of trees
- Art: Doodling, sketching
- Children's games/air-planes

Prior Learning from UoL 2:

- Key principles of design; need (child safety/function)
- Evolving their creative ideas
- Modelling ideas using recycled cardboard
- Reading and applying a working drawing to their material
- Making considered decisions through recycled material use
- Principles of forces in joint design
- Minimising material use in artefact realisation
- Softwood versus hardwood
- Sustainability of manufactured boards; plywood
- Butt joint, dowel joint, screw joint, housing joint
- Safety for user; safe practice with hand tools (marking gauge, chisel, tenon saw, spokeshave), power tools (cordless drill) and machines (pillar drill, pyrography), surface preparation, and applied finish (varnish)

Other:

- Some students may have experience of woodcraft skills from home, or Maker Spaces.
- May know about the general health and safety issues for young children; sharp edges, etc.
- The form/shape of an air-plane/loop for game

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 6: Child's game	Design and make a game to promote young children's numeracy and motor skills. The game could be used on a horizontal or vertical surface. The game should include considerations for recycling.
Problem 7: Key holder	Design and make an artefact to hold a small number of keys. The artefact must be suitable for display on a mantelpiece or shelf. The design should be based on the form of a plane and be unique in design.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	1.1, **1.3**, **1.4**, **1.5**, **1.7**, **1.8**, **1.10**, **1.12**	1.1	Explore
Strand 2 Design Thinking	**2.1**, **2.4**, **2.5**, **2.6**, 2.9, 2.10, **2.11**	2.9, 2.10	Evolve, Devise
Strand 3 Wood Science and Materials	3.2, **3.3**, 3.5, **3.9**, **3.12**	3.2, 3.5, **3.12**	Evaluate, Explain, Consider

Wellbeing Indicators: Active, Aware, Responsible, Resilient

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Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.1	• Explore the key elements of a design process for the completion of the problem, thus setting personal goals. • Explore the world around them to identify a need for the problem; function/purpose, empathy and user safety. • Hand tools (Marking gauge, chisel, tenon saw, coping saw, spokeshave), power tools (pyrography pen, cordless drill) and Machines (Pillar Drill) • Safe practice in surface preparation (sanding block) and applied finish (lacquer).	• Identify and explore the key elements of the design task from design to realisation. • Understand design key principles; function and/or user empathy.
2.9	• Initial ideas captured via doodling and freehand grid sketching. • Analysis of the problem statement to explore and understand the key elements in the context of the problem criteria. • Apply thorough research skills (knowing where to research) to determine sizes relevant to the problem criteria, forces and joints in the context of halving joint, and dowel joint. • Critical reflection when researching existing artefacts; supports evolving their ideas.	• Ideas communicated and produced through doodles and freehand grid sketches. • Researching key sizes for artefact function, and key forces and joints for its realisation. • Applying best practice approach to produce a design from a working drawing. • Accurate and safe best practice with marking out tools; steel rule, marking gauge and hand tools, power tools and machines – tenon saw, coping saw, paring chisel, spokeshave, pyrography pen, and drill.
2.10	• Devising a model using recycled cardboard. • Evolving their creative ideas through evaluating their model and initial ideas.	• Evolution of ideas through sustainable model making.
3.2	• Characteristics and properties of common species of trees.	• Evaluation of the characteristics and properties of common species of trees.
3.5	• Life cycle of a tree, External parts of a tree, Internal parts of a tree, Cell structure of trees.	• Explanation of the growth and structure of wood; photosynthesis; pith to crown; cell structure.
3.12	• Impact on the environment when sourcing material and alternative materials for upcycling.	• Minimising waste and using recycled materials for environmental sustainability. • Adhesives; preparation and application of a finish.

Learning Experiences

- Ongoing assessment and feedback of problem activity worksheets.
- Bug list activity for need-finding.
- Mind map activity to support analysis of problem statement.
- Evolution of design ideas from critical reflection on research, in context of the problem, and sustainable model.
- Testing of joints from physical models to determine forces involved.
- Safety signs quiz and end of chapter questions.
- Verbal questions for working drawing comprehension.
- Accuracy and safe practice in marking out, processing and finishing.
- Student critical reflection on their learning experience and personal goals.

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 4

Age and Stage of Students

Age/Stage	12 to 13/First Year
Suggested Months	February to March
Suggested Duration	3 to 5 weeks

Students' Prior Learning

From their Primary Curriculum

- Rainforests
- Forests and woods

Prior Learning from UoL 3

- Life cycle of a tree, photosythesis
- External/Internal parts of a tree
- Cell structure – hardwoods/softwoods
- Need-finding, user
- Research
- Evolving design solutions
- Modelling, using templates
- Halving joint
- Recycled materials
- Pyrography
- Pillar Drill

Other

- Students may have some familiarity with natural, planted or managed forests.
- Some students may be familiar with or have some knowledge of book organisers and phone holders.
- Most students should have some degree of knowledge around wellbeing.

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 8: Book organiser	Design and make a book organiser to support books in a vertical orientation on a shelf or desk. An aspect of the design of the organiser should reflect a theme of wellbeing.
Problem 9: Phone holder	Design and make an artefact to hold and display a modern smartphone. The artefact should be unique in design, compact and suitable for display on a shelf or desk. A suitable handcrafted joint should be an integral part of the project.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	**1.3**, **1.4**, **1.5**, **1.7**, **1.8**, **1.10**, **1.12**	**1.5**, **1.7**, **1.8**	Represent, Explain, Apply
Strand 2 Design Thinking	**2.1**, 2.3, **2.4**, **2.5**, **2.6**, 2.9, 2.10, **2.11**	**2.5**, 2.9	Communicate, Evolve
Strand 3 Wood Science and Materials	**3.9**, 3.10, 3.11, **3.12**	**3.9**, 3.10. 3.11	Create, Appreciate, Investigate

Wellbeing Indicators: Aware, Active, Respected, Responsible

Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.5	• Doodling, oblique, freehand sketches using crating, mind map	• Ideas communicated and produced through doodles, 3D sketches with crating, oblique, mind maps and other appropriate graphical media
1.7	• Safe practise, coping saw, chisel, tenon saw, marking knife, pillar/cordless drill, scroll saw, pyrography pen	• Explanation of the function, application and safety considerations of the relevant hand tools, equipment and fixtures in the Wood Technology room
1.8	• Safe practise, finger joint, dowel joint, relief/incised carving, marquetry, pyrography	• Accurate and safe processing of a finger joint/dowel joint and realisation of a chosen design using the relevant creative craft processes and techniques (relief/ incised carving, marquetry, pyrography)
2.5	• Language, notes, doodling, freehand sketches, mind map, digital media, mood board.	• Collaboration with peers, discussion, using language, presentation skills, communication of design ideas and thinking using different appropriate media
2.9	• Evaluation of design ideas and models, critical reflection using checklists, and investigation of similar solutions	• Ability to critically reflect on existing products from Research and Investigation • Evolution of design ideas prompted by evaluation and critical analysis
3.9	• Use of upcycled and/or recycled materials to enhance the appearance or functionality of a design	• Produce an artefact which solves a design problem and incorporates the use of appropriate alternative materials
3.10	• Biodiversity, tropical rainforest, temperate/boreal forest, ecosystem, monoculture forest, sustainably managed forest	• Recognising types of forests and how they contribute to environmental sustainability
3.11	• Sustainably sourced timber, sustainable harvesting methods, carbon sequestration	• Expressing an understanding of how sustainably sourced timber, sustainable harvesting methods and carbon sequestration contribute to environmental sustainability

Learning Experiences

- Ongoing assessment and feedback of problem activity worksheets
- Observation, feedback and verbal questioning of working drawing comprehension
- Assessment of student ability to evaluate and iterate their design ideas
- Observation, questioning and discussion with students during the marking out and processing stages in relation to tool function, application and safe considerations and best practise
- Stop and Jot, KWL, Think, pair, share activities
- Discussion, verbal questioning and debate
- End of chapter mind map and poster/presentation activities
- Evaluation of completed artefact (self, peer and teacher)

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 5

Age and Stage of Students

Age/Stage	12 to 13/First Year
Suggested Months	April to May
Suggested Duration	6 to 8 weeks

Students' Prior Learning

From their Primary Curriculum

- Tree products: timber/wood, paper, bark mulch, animal bedding

Prior Learning from UoL 4

- Types of forest (temperate, tropical rainforest, boreal)
- Sustainably managed forest
- Monoculture forest
- Carbon sequestration
- Need-finding, ergonomics, research and investigation, modelling
- Finger and dowel joint
- Pyrography, carving, marquetry

Other

- Many students will have used some form of a sweet dispenser before.
- Some students will be in some way familiar with a monoculture managed/planted forest.
- Students may have used, seen or have some knowledge of tissue box covers.

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 10: Sweet/Nut dispenser	Design and make an artefact to dispense sweets or nuts. The artefact should be easy to use and compact in design.
Problem 11: Pencil/ Makeup brush holder	Design and make an artefact with a rotating holder to accommodate pencils or makeup brushes. The artefact should be compact, stable and suitable for use on a desk or table.
Problem 15: Tissue box cover	Design and make an artefact with a rotating holder to accommodate pencils or makeup brushes. The artefact should be compact, stable and suitable for use on a desk or table.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	**1.3**, **1.4**, **1.5**, **1.10**, 1.11, **1.12**	**1.5**, 1.11	Represent, Investigate
Strand 2 Design Thinking	**2.1**, 2.3, **2.4**, **2.5**, **2.6**, 2.9, 2.10, **2.11**, 2.13	**2.5**, **2.11**, 2.13	Communicate, Produce, Recognise
Strand 3 Wood Science and Materials	**3.3**, 3.10, 3.11, **3.12**	3.10, 3.11, **3.12**	Appreciate, Investigate, Consider

Wellbeing Indicators: Aware, Active, Respected, Responsible

Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.5	• Doodling, freehand sketches, orthographic projection, prototypes, mind map	• Ideas communicated and produced through doodles, sketches, prototypes, mind maps and other appropriate graphical media
1.11	• Wood as a renewable resource, environmental and social impacts of using wood in a design/artefact	• Recognising the importance of trees in terms of carbon sequestration and biodiversity
2.5	• Language, notes, doodling, isometric grid sketches, freehand sketches, orthographic projection, mind map, digital media, mood board	• Collaboration with peers, using language, discussion, presentation skills, communication of design ideas and thinking using different appropriate media
2.9	• Fixation, evaluation of design ideas and models, critical reflection	• Ability to recognise and overcome fixation from critical reflection
2.11	• Functional, aesthetics, surface preparation, applied finish, compact, stable, finger/dowel joint, biscuit joint relief/incised carving, pyrography	• Accurate marking out and safe processing of a finger/dowel joint, utilising creative crafts to help create an appealing artefact, understanding the terms compact and stable in terms of design
2.13	• Sustainably managed and monoculture forests, environmental/social effects of afforestation and reforestation. Using recycled materials	• Successful integration of recycled materials into their design solution, recognise the importance of using recycled materials in design and some of the potential impacts of using wood as a material in design
3.10	• Reforestation, afforestation, forests of Ireland, sustainably managed forest, importance of trees in terms of environmental sustainability, deforestation.	• Recognising types of forests and how they contribute to environmental sustainability, deforestation and its causes
3.11	• Stages in a planted/managed forest, Coillte, waste materials use (thinning and harvesting)	• Expressing an understanding of how sustainably sourced timber, sustainable harvesting methods and carbon sequestration contribute to environmental sustainability
3.12	• Carbon Sequestration, afforestation in Ireland, pesticides, fertilisers monoculture forest	• Understand and explain the environmental impact of sourcing wood from monoculture forests

Learning Experiences

- Ongoing assessment and feedback of problem activity worksheets.
- Observation, feedback and verbal questioning of working drawing comprehension.
- Assessment of student ability to evaluate and iterate their design ideas showing awareness of fixation.
- Observation, questioning and discussion with students during the marking out and processing stages in relation to tool function, application and safe considerations and best practice.
- Active Learning Strategies: Stop and Jot, KWL, Think, pair, share, pair work, anticipation exercises, debates.
- End of chapter mind map and poster/presentation activities.
- Evaluation of completed artefact (self, peer and teacher).

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 6

Age and Stage of Students

Age/Stage	13 to 14/Second Year
Suggested Months	August to October
Suggested Duration	6 to 9 weeks

Students' Prior Learning

Prior Learning from UoL 5

- Freehand sketching; 3D freehand sketching
- Orthographic projection for working drawing
- Design principles; real-world problem, observation
- Design thinking aspects; need finding, analysis, initial ideas, research (key sizes and dimensions), investigation (iterative approach and critical reflection), idea development (fixation), modelling/prototyping
- Types of forest, deforestation, importance of trees for environment
- Hand tools: marking gauge, chisel, tenon saw, coping saw, plane, clamp
- Power tools: cordless drill, sander
- Machines: pillar drill, scroll saw
- Finger joint, housing joint
- Laminating wood
- Carving; incised; relief
- Plastics; strip heater

Other

- May have experience of wood craft skills from home, or maker spaces
- May know about the general health and safety issues for young children; sharp edges, etc.
- May have experienced the initiative 'Grow Your Own' and healthy eating
- The shape or form of headphones

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 13: Fruit holder	Design and make a fruit holder for a family kitchen setting. The holder should incorporate a fixture or fitting to allow easy for hanging or holding fruit. The holder should incorporate a design of a character or keyword to motivate children to eat fruit.
Problem 14: Headphone holder	Design and make an artefact to hold and display a smartphone and a pair of headphones or earphones. The design should be stable and ensure easy access to the items.
Problem 15: Clock display	Design and make a decorative artefact so one can read the time in a living room setting. The artefact should be suitable for display on a shelf or mantelpiece. The artefact should incorporate a range of handcraft skills.
Problem 16: Tablet support	Design and make an artefact to support a tablet while viewing content. The artefact should be attractive in appearance and demonstrate skilful handcraft in wood.
CBA 1	Wood Science in our Environment (6 hours over 3 weeks) ***Parallel learning to one problem above in this UoL6***

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	1.1, **1.3**, **1.4**, **1.5**, **1.7**, **1.8**, 1.9, **1.10**, **1.12**	1.1, 1.9	Explore, Demonstrate
Strand 2 Design Thinking	**2.1**, 2.2, 2.3, **2.4**, **2.5**, **2.6**, 2.9, 2.10, **2.11**, 2.14	2.2, 2.3, 2.9, 2.10, 2.14	Manage, Evaluate, Evolve, Devise, Investigate
Strand 3 Wood Science and Materials	**3.3,** 3.8, **3.9, 3.12**	**3.3**	Understand

Wellbeing Indicators: Active, Aware, Responsible, Resilient

Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.1	• Key elements of design thinking for the completion of the task (problem). Need-finding; empathy for user (motivation – eat fruit, headphone holder, readability/ viewing angle). Problem requirements, good design.	• Collaborate with their peers to identify and explore the key elements of the task and good design
1.9	• Demonstrate safe practice and craft excellence in the context of hand tools (chisel; mortise, paring and carving, tenon saw, coping saw) and machines (pillar drill, mortise machine, lathe, scroll saw, steam box), creative crafts; laminating, veneering, and woodturning	• Recognise and demonstrate the creative craft principles and practices (woodturning, bending wood, carving, and veneer work)
2.2	• Analysis, specification, communicating initial ideas. • Research and investigate in the context of the design (outlined in previous points) and the realisation (housing joint, mortise and tenon joint, dowel joint, finger joint). Investigation, reflect and justify the relevant information to solve the problem.	• Researched key sizes and ergonomics for artefact function, and key forces and joints for its realisation. Evolution of ideas to overcome fixation from critical reflection on existing products from research and investigation, managing relevant information.
2.3	• Continual reflection and evaluating their work	• Critical reflection on their learning and achieving personal goals
2.9	• Sketch and annotate evolving ideas	• Evolution of ideas to overcome fixation on existing products from research and investigation
2.10	• Former template design (and cauls, if required)	• Ideas communicated and produced through model(s)
2.14	• Investigating minimising and managing waste	• Evidence of appreciating environmental sustainability by using recycled materials and minimising waste; solid wood versus laminated wood.
3.3	• Timber conversion, moisture content, defects, manufactured boards (MDF, flexiply, and laminated pineboard)	• Wood as a sustainable and natural material (conversion, moisture content, natural aesthetics). Solid wood versus laminated wood.

Learning Experiences

- Ongoing assessment and feedback of problem activity worksheets.
- Exploring the key elements fostering their evolution of design ideas from critical reflection on the problem brief to research and investigation.
- Designing and making a template.
- Testing of joints from physical models to determine forces involved.
- Safety signs quiz and end-of-chapter questions.
- Verbal questions for working drawing comprehension.
- Appreciate the conversion of wood, moisture content, glues – relevant learning for laminating.
- Appreciating the importance of minimising waste through recycling and laminating wood.
- Demonstrate craft excellence through marking out, processing and assembly.
- Assemble parts using gluing and clamping techniques (use of cauls).
- Student critical reflection on their learning experience and personal goals.

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 7

Age and Stage of Students

Age/Stage	13 to 14/Second Year
Suggested Months	November to December
Suggested Duration	5 to 6 weeks

Students' Prior Learning

Prior Learning from UoL 6

- Freehand sketching; rendering
- Drawing – orthographic drawing, Template
- Design principles; Good design, empathy
- Iterative approach to design thinking aspects; need-finding, analysis, initial ideas, research (user, key sizes and dimensions), investigation (iterative approach and critical reflection), idea development (evolution), experimentation (modelling/prototyping/template), ongoing evaluation
- Methods of Conversion, Natural Defects, Sustainable practice during felling and conversion
- Manufactured boards; MDF, Pineboard, flexiply, Health and safety
- Bending and laminating: Former, laminates, suitable materials, process
- Safety for user; and processing (PPE)
- Hand tools; marking gauge, chisel, tenon saw, plane
- Machines; lathe, mortise machine, pillar drill, bandsaw
- Mortise and tenon joint, dowel joint, housing joint, finger joint
- Fixtures and fittings; Nails and knockdown fittings
- Creative crafts; laminating, carving, wood-turning, veneer work

Other

- Some students may have experience of wood craft skills from home, or maker spaces
- May know about the general health and safety issues for young children; sharp edges, etc.
- Recycling waste products; upcycling
- The size of a photo

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 17: Photo frame holder	Design and make a stand which can hold multiple photo frames. The stand must be versatile to accommodate frames in various orientations; landscape or portrait. The stand must also incorporate recycled materials to hang the frames from.
Problem 18: Photo frame	Design and make a frame to display a photograph or a design demonstrating your skill in veneering or pyrography. The frame should be elegant in appearance and suitable for display on a shelf or table.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	1.1, **1.3**, **1.4**, **1.5**, 1.6, **1.7**, **1.8**, 1.9, **1.10**, **1.12**	1.1, 1.6, 1.9	Manage, Explore, Create, Demonstrate
Strand 2 Design Thinking	**2.1**, 2.2, 2.3, **2.4**, **2.5**, 2.6, 2.9, 2.10, **2.11**	2.2, 2.3, 2.9, 2.10	Evaluate, Evolve, Devise
Strand 3 Wood Science and Materials	**3.3**, **3.9**, **3.12**	**3.3**	Understand

Wellbeing Indicators: Active, Aware, Responsible, Resilient

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Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.1	• Key elements for the completion of the task (problem); resources, time, skills	• Identify and explore the key elements of the task
1.6	• Sketching (texture), and orthographic projection (working drawing) using a range of media	• Ideas communicated using texture and produced through working drawings for realisation
1.9	• Best practice principles for craft excellence; understanding structures and forces; grain direction for mortise and tenon joint, bridle joint, and veneer work	• Recognise and demonstrate the craft excellence through accurate and safe application of hand tools, power tools and machines: veneer work (parquetry)
2.2	• Need-finding (function and/or user empathy; display of an item of value to user (memory captured on a photo). Analysis, specification, communicating initial ideas. Research information in the context of the design (outlined in previous points) and the realisation (joints and veneer work and pyrography). Investigation, reflect and justify the relevant information.	• Manage information and thinking in an iterative approach, prompted by evaluation
2.3	• Continual reflection and evaluating their work	• Devising personal goals, and evaluating their learning
2.9	• Sketch and annotate evolving ideas based on critical reflection	• Participate and demonstrate critical reflection in the context of ideas communicated and produced through doodles, sketches, and models
2.10	• Complete a model or prototype to test the design	• Plan and produce models and templates informed from researched key sizes and ergonomics for artefact function, and key forces and joints toward a solution prompted by evaluation
3.3	• Timber seasoning, manufactured boards (hardboard). Investigating minimising and managing waste.	• Appreciation of wood as a sustainable and natural material (seasoning, moisture content). Recycling through upcycling materials (clothes hangers).

Learning Experiences

- Ongoing assessment and feedback of problem activity worksheets.
- Exploring the key elements fostering their evolution of design ideas from critical reflection on the problem brief to research and investigation.
- Explore the real world need (problem); protect valued memories.
- Doodling and sketching initial ideas to a higher level of ability; understanding layout and organisation of parts.
- Designing and making a template.
- Testing of joints from physical models to determine forces involved.
- Safety signs quiz and end-of-chapter questions.
- Verbal questions for working drawing comprehension.
- Appreciate the seasoning of wood (air seasoning), moisture content, types of glues.
- Appreciating the importance of minimising waste through recycling through upcycling waste materials/ products (hangers).
- Demonstrate craft excellence through marking out, processing, surface preparation and assembly.
- Assemble parts using gluing and clamping frames.
- Student critical reflection on their learning experience and personal goals.

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 8

Age and Stage of Students

Age/Stage	13 to 14/Second Year
Suggested Months	January to March
Suggested Duration	7 to 10 weeks

Students' Prior Learning

Prior Learning from UoL 7

- Manufactured boards – OSB, Chipboard, properties
- Machines – safety, PPE, mortise machine, Bandsaw
- Veneer work – process, safety, sustainability
- Pyrography – process, safety
- Adhesives – clamping, types of glue, application
- Alternative materials
- Need-finding, analysis, research, investigation (iterative approach and critical reflection)
- Idea development, modelling/prototyping
- Sketching texture
- Working drawing – complete dimensions and cutting list
- Evaluation of developed ideas
- Housing joint

Other

- Students may already have solved a previous UoL design problem that incorporated some personal items: phone and keys
- Some students will be familiar with wall mounted items like picture frames, mirrors bathroom cabinet and other similar storage items
- Students may have used, seen or have some knowledge of portable trays

What Learning Do We Want To Focus On?

Teachers choose one of the following problem-driven projects:

Problem 19: Personal items storage	Design and make an artefact to store and display a small number of personal items. The artefact should be designed to be wall mounted and incorporate distinct spaces to ensure neat organisation. A suitable handcrafted joint should be an integral part of your design.
Problem 20: Portable tray	Design and make a tray suitable for carrying cups, plates, bowls and other tableware. The artefact should be easy to carry and attractive in appearance.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	**1.2**, **1.3**, **1.4**, **1.5**, 1.6, **1.8**, 1.11, **1.10**, **1.12**	**1.2**, 1.6, **1.8**, **1.12**	Justify, Create, Apply
Strand 2 Design Thinking	2.1, 2.3, **2.4**, **2.5**, **2.6**, 2.9, 2.10, **2.11**, 2.13	**2.4**, **2.6**, 2.9, 2.10, **2.11**	Understand, Produce, Evolve, Devise
Strand 3 Wood Science and Materials	**3.3**, 3.6, 3.7, 3.8, 3.9, 3.11, **3.12**	3.8	Utilise

Wellbeing Indicators: Aware, Active, Respected, Responsible

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Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.2	• Understand the rationale for using certain materials, tools and processes in realising joints and creative craft elements for a design solution	• Student self-evaluation of completed artefact, ability to rationalise selection of materials, tools and processes
1.6	• Dimensions, cutting list and working drawing. Freehand sketches to develop design ideas and represent research and other information.	• Accurately complete all aspects of the working drawing(s). Evaluation of sketches related to the exploration and development of a design solution.
1.8	• Dovetail joint, dovetail template, marquetry, lamination, housing joint, wall mounted artefact, Mortise and tenon joint	• Accurate and safe processing of joints and realisation of chosen design using the relevant creative craft processes and techniques (lamination, veneering, pyrography), appropriate fixtures for wall mounting
1.12 **2.11** **3.8**	• Sustainable and suitable woods/manufactured boards used to make curved handles and contrasting veneers for decoration. Dovetail joints for functionality and appearance.	• Understanding the properties of wood and other materials for jointing, lamination or veneering to enhance the sustainability, functionality and appearance of a produced artefact
2.4	• Key principles of design: need-finding, fixation, iteration, evaluation. Ergonomics (handles, access items, carry artefact around).	• Application and understanding of the key principles of design with a particular focus on the area of function, ergonomics and aesthetics
2.6	• Evolving creative ideas through reflection on initial and developed ideas • Modelling designs using recycled cardboard. Fully completing and then applying a working drawing to their material.	• Ability to communicate and develop design ideas through doodles, freehand sketches and models. Accurate completion of all aspects of a working drawing and application to relevant materials.
2.9	• Managing and documenting an iterative design process; evaluation and critical reflection of research, investigation, design ideas and models	• Demonstrate ability to follow iterative design process through critical reflection and clear communication of design solutions through various media
2.10	• Use of formers in bending wood, model/prototype made from recycled materials	• Best practice, making and using formers and models/ prototypes, using waste or recycled materials

Learning Experiences

- Ongoing assessment and feedback of problem activity worksheets.
- Observation, feedback and verbal questioning of working drawing comprehension.
- Assessment of student ability to evaluate and iterate their design ideas.
- Observation, questioning and discussion with students during the marking out and processing stages in relation to tool function, application and safe considerations and best practice.
- Active Learning Strategies: Stop and Jot, KWL, Think, pair, share, pair work, anticipation exercise, debates.
- End-of-chapter mind map and poster/presentation activities.
- Evaluation of completed artefact (self, peer and teacher).

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 9

Age and Stage of Students

Age/Stage	13 to 14/Second Year
Suggested Months	April to May
Suggested Duration	4 to 6 weeks

Students' Prior Learning

Prior Learning from UoL 8

- Manufactured boards – main types, properties and uses
- Machines – safety, PPE, mortise machine, band saw, etc.
- Power tools: Router, Transformer, Sander, Drill
- Bending and laminating wood – health and safety, former, laminates, materials, process
- Veneer work – marquetry
- Adhesives – types, uses, application, safety
- Models – templates
- Need-finding, analysis, research, investigation (iterative approach and critical reflection)
- Idea development, modelling/prototyping, ergonomics
- Freehand sketching, working drawing – complete dimensions and cutting list
- Evaluation
- Iterative approach to design thinking aspects

Other

- Some students may have used or be in some way familiar with a tablet holder or similar artefact

What Learning Do We Want To Focus On?

Problem 21: Support stand	Design and make an artefact to hold and display an open book, magazine or tablet device. The artefact should be suitable for display on a desk or table and incorporate a range of handcraft skills.

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	**1.3**, **1.4**, **1.5**, 1.6, **1.7**, **1.8**, 1.9, **1.10 1.12**	**1.7**, 1.9	Explain, Demonstrate
Strand 2 Design Thinking	**2.1**, 2.2, 2.3, **2.4**, **2.5**, **2.6**, 2.7, 2.8, 2.9, 2.10, **2.11**, 2.13	2.3, 2.7, 2.9, 2.10	Communicate, Evaluate, Evolve, Devise
Strand 3 Wood Science and Materials	**3.3**, 3.8, **3.9**, **3.12**	3.8, **3.9**	Utilise, Create

Wellbeing Indicators: Aware, Active, Respected, Responsible

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Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.7	• Safe practice, face visor, woodturning lathe and tools, equipment, and parts.	• Explanation of the function, application and safety considerations of the relevant woodturning lathe tools, equipment and parts
1.9	• Best practice principles for craft excellence in relation to both woodturning and veneer work in terms of both the design and processing of materials	• Demonstrate the craft excellence through accurate and safe application of relevant hand-tools and processes in woodturning and veneer work
2.3	• Continual reflection and evaluation of work, by both peers and teacher	• Ability to communicate and develop design ideas and solutions using freehand sketching, drawings, doodles, mind maps, models, prototypes and other appropriate media
2.7	• Evolve design ideas and solutions through appropriate media	• Effective evaluation through the learning experience and final reflection to feed forward toward future learning experiences (CBA 2)
2.9	• Managing and documenting an iterative design process; evaluation and critical reflection and critical reflection of research, design ideas and models	• Demonstrate ability to follow iterative design process through critical reflection and clear communication of design solutions through various media
2.10	• Create and utilise and appropriate model/prototype of the chosen design solution and a suitable template for ensuring the woodturning design matches the design	• Safe practice, choice of suitable materials for mode/ prototype and template, i.e. recycled or waste materials
3.8, 3.9	• Choosing appropriate wood(s) for the lathe work and veneer work elements based on the aesthetic and functional properties and requirements of the design solution	• Evaluation of completed artefact. Discussion regarding student evaluation of artefact and learning experience.

Learning Experiences

- Ongoing assessment and feedback of problem activity worksheets.
- Observation, feedback and verbal questioning of working drawing comprehension.
- Assessment of student ability to evaluate and iterate their design ideas.
- Observation, questioning and discussion with students during the marking out and processing stages in relation to tool function, application and safe considerations and best practice.
- Active Learning Strategies: Stop and Jot, KWL, Think, pair, share, pair work anticipation exercise, debates.
- End-of-chapter mind map and poster/presentation activities.
- Evaluation of completed artefact (self, peer and teacher).

Reflection

Planning:

Preparation:

Implementation:

UNIT OF LEARNING 10

Age and Stage of Students

Age/Stage	14 to 15/Third Year
Suggested Months	August to October
Suggested Duration	7 to 9 weeks

Students' Prior Learning

Prior Learning from UoL 9

- Sketching; tracing paper
- Drawing – orthographic projection
- Design principles; Self-reflection
- Iterative approach to design thinking aspects
- Effects of deforestation, Reducing deforestation
- Manufactured boards; pineboard, blockboard
- Safety for user; and processing (PPE)
- Hand tools; Striking tools, clamps
- Machines; lathe
- Dowel joint, spigot and socket joint, screw joint
- Creative crafts; woodturning, veneer work

Other

- Some students may have experience of wood-craft skills from home, or maker spaces
- May know about the general health and safety issues
- Recycling waste products; upcycling
- Biodiversity and nature

What Learning Do We Want To Focus On?

Problem 22: Bug hotel	Design and make a bug hotel to promote biodiversity in a school garden or local community setting. The bug hotel must include a range of recycled materials suitable to attract a range of bugs. The finish on the bug hotel must ensure the bug hotel is sustainable in an outdoor setting.
CBA 2	Self-Analysis and Evaluation ***Parallel learning in this UoL10***

Strand	Possible Learning Outcomes	Learning Outcomes to Focus on	Action Verbs
Strand 1 Principles and Practices	1.1, **1.3**, **1.4**, **1.5**, 1.6, 1.9, **1.10**, **1.12**	1.6, 1.9	Create, Demonstrate
Strand 2 Design Thinking	**2.1**, 2.2, 2.3, **2.4**, **2.5**, **2.6**, 2.7, 2.8, 2.9, 2.10, 2.12	2.3, 2.7, 2.8, 2.9, 2.12	Evolve, Communicate, Compile
Strand 3 Wood Science and Materials	3.3, **3.4**, **3.7**, **3.10**, 3.12	3.4, 3.7, **3.10**	Evaluate, Appreciate

Wellbeing Indicators: Active, Responsible, Resilient, Respected, Connected

Key Learning for Students

LO	KEY LEARNING	ASSESSMENT OF/FOR LEARNING
1.6	• Doodling, sketching with colour, and orthographic projection (working drawing) using a range of media	• Create an accurate working drawing and template. Using colour when sketching.
1.9, 2.12	• Hand tools (chisel, paring, dovetail saw, coping saw) and power tools (drill). Scope for use of domino joiner, and biscuit joiner. Best practice principles and skills for craft excellence – understanding structures and forces; dovetail joint, dowel joint, screw joint.	• Produce an artefact, which offers a solution to the problem criteria especially the user needs and purpose
2.3	• Self-assessment and reflection for iteration and development	• Effective evaluation through the learning experience and final reflection to feed forward toward CBA 2
2.7, 2.8	• In a folio, sketch and annotate evolving ideas. Represent the learning gained from completing a model, template or prototype to test the design. Numeracy skills – key dimensions and sizes. Experimentation; supported through a CAD model(s).	• Communication of iterative design process through various media
2.9	• Managing and documenting an iterative design process; Understanding the problem; analysis, specification, capturing and communicating ideas. Thorough research, both in the context of the design and the realisation, and sustainability of materials in an outdoor setting, and attracting bugs. Investigation; justify the relevant information; Evolution; through continual reflection and evaluation for progress and future learning.	• Design thinking process from need finding to prototype prior to realisation; Iterative approach, prompted by evaluation
3.4	• Use of wood in comparison to alternative materials	• Appreciation of wood as a sustainable and natural material (outdoor setting)
3.7	• Related factors to alternative material use; adhesives; outdoor glue types. Applied finish (outdoor).	• Justify material (wood, glues, finishes) use and protection in an outdoor setting
3.10	• Need for supporting biodiversity in our area. Local ecology (biodiversity) and sustainability supported through recycling materials, and sustainable use of material, plastics (acrylic).	• Appreciation for protecting and supporting biodiversity

Learning Experiences

- Bug list activity for need-finding.
- Doodling initial ideas.
- Train of thought activity to support analysis of problem statement; mind map of keywords from problem statement; understand the problem.
- Model making while appreciating the importance of minimise waste through recycling.
- Poster creation identifying and evaluating tree species.
- Kahoot! quiz on manufactured boards – plywood.
- Verbal questions for working drawing comprehension; numeracy and literacy.
- Safety check-list or Stop and Jot.
- Accuracy and safe practice in marking out, processing trenches, surface preparation, and applying a finish.
- Student reflection on their learning experience and personal goals.

Reflection

Planning:

Preparation:

Implementation:

Three–Year Plan

YEAR 1										
Timeline	**AUGUST**	**SEPTEMBER**	**OCTOBER**	**NOVEMBER**	**DECEMBER**	**JANUARY**	**FEBRUARY**	**MARCH**	**APRIL**	**MAY**
Unit of Learning	**UoL 1**		**UoL 2**		**UoL 3**		**UoL 4**		**UoL 5**	
Problem	**Problem 1 or 2**		**Problem 3, 4 or 5**		**Problem 6 or 7**		**Problem 8 or 9**		**Problem 10, 11 or 12**	
Relevant Textbook Chapters										
Ch. 1 Health and Safety										
Ch. 2 Sketching										
Ch. 3 Drawing										
Ch. 4 Design as Creative Problem-Solving										
Ch. 5 Exploration and Need-Finding										
Ch. 6 Discovery and Analysis										
Ch. 7 Research and Investigation										
Ch. 8 Idea Development										
Ch. 9 Experimentation										
Ch. 10 Evolution through Evaluation										
Ch. 11 Species of Trees										
Ch. 12 Growth and Structure of Wood										
Ch. 13 Forests of Ireland and the World										
Ch. 14 Trees and the Environment										
Ch. 15 Felling and Timber Conversion										
Ch. 16 Timber Seasoning										
Ch. 17 Manufactured Boards										
Ch. 18 Hand Tools										
Ch. 19 Power Tools										
Ch. 20 Machines										
Ch. 21 Forces and Joints										
Ch. 22 Fixtures and Fittings										
Ch. 23 Woodturning										
Ch. 24 Bending and Laminating										
Ch. 25 Carving										
Ch. 26 Scrollwork										
Ch. 27 Veneer Work										
Ch. 28 Alternative Materials										
Ch. 29 Adhesives										
Ch. 30 Finishes										

YEAR 2										
Timeline	**AUGUST**	**SEPTEMBER**	**OCTOBER**	**NOVEMBER**	**DECEMBER**	**JANUARY**	**FEBRUARY**	**MARCH**	**APRIL**	**MAY**
Unit of Learning	**UoL 6**			**UoL 7**		**UoL 8**			**UoL 9**	
Problem	**Problem 13, 14, 15 or 16**			**Problem 17 or 18**		**Problem 19 or 20**			**Problem 21**	
CBAs/Final Assessment	**CBA 1 (3 weeks)**									
Relevant Textbook Chapters										
Ch. 1 Health and Safety										
Ch. 2 Sketching										
Ch. 3 Drawing										
Ch. 4 Design as Creative Problem-Solving										
Ch. 5 Exploration and Need-Finding										
Ch. 6 Discovery and Analysis										
Ch. 7 Research and Investigation										
Ch. 8 Idea Development										
Ch. 9 Experimentation										
Ch. 10 Evolution through Evaluation										
Ch. 11 Species of Trees										
Ch. 12 Growth and Structure of Wood										
Ch. 13 Forests of Ireland and the World										
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Ch. 24 Bending and Laminating										
Ch. 25 Carving										
Ch. 26 Scrollwork										
Ch. 27 Veneer Work										
Ch. 28 Alternative Materials										
Ch. 29 Adhesives										
Ch. 30 Finishes										

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YEAR 3											
Timeline	**AUGUST**	**SEPTEMBER**	**OCTOBER**	**NOVEMBER**	**DECEMBER**	**JANUARY**	**FEBRUARY**	**MARCH**	**APRIL**	**MAY**	**JUNE**
Unit of Learning	**UoL 10**										
Problem	**Problem 22**										
CBAs/Final Assessment	**CBA 2 (3 weeks)**			**Project**							**Exam**
Relevant Textbook Chapters											
Ch. 1 Health and Safety				REVISE						REVISE	
Ch. 2 Sketching				REVISE						REVISE	
Ch. 3 Drawing				REVISE						REVISE	
Ch. 4 Design as Creative Problem-Solving				REVISE						REVISE	
Ch. 5 Exploration and Need-Finding				REVISE						REVISE	
Ch. 6 Discovery and Analysis					REVISE					REVISE	
Ch. 7 Research and Investigation					REVISE					REVISE	
Ch. 8 Idea Development					REVISE					REVISE	
Ch. 9 Experimentation					REVISE					REVISE	
Ch. 10 Evolution through Evaluation					REVISE					REVISE	
Ch. 11 Species of Trees						REVISE				REVISE	
Ch. 12 Growth and Structure of Wood						REVISE				REVISE	
Ch. 13 Forests of Ireland and the World						REVISE				REVISE	
Ch. 14 Trees and the Environment						REVISE				REVISE	
Ch. 15 Felling and Timber Conversion						REVISE				REVISE	
Ch. 16 Timber Seasoning							REVISE			REVISE	
Ch. 17 Manufactured Boards							REVISE			REVISE	
Ch. 18 Hand Tools							REVISE			REVISE	
Ch. 19 Power Tools							REVISE			REVISE	
Ch. 20 Machines							REVISE			REVISE	
Ch. 21 Forces and Joints								REVISE		REVISE	
Ch. 22 Fixtures and Fittings								REVISE		REVISE	
Ch. 23 Woodturning								REVISE		REVISE	
Ch. 24 Bending and Laminating								REVISE		REVISE	
Ch. 25 Carving								REVISE		REVISE	
Ch. 26 Scrollwork									REVISE	REVISE	
Ch. 27 Veneer Work									REVISE	REVISE	
Ch. 28 Alternative Materials									REVISE	REVISE	
Ch. 29 Adhesives									REVISE	REVISE	
Ch. 30 Finishes									REVISE	REVISE	

Chapter–by–Chapter Overview

Key

S=Strand | PP=Principles and Practices | DT=Design Thinking | WSM=Wood Science and Materials | E=Element | PM=Planning and Managing | Co=Communicating | Cr=Creating | ES=Environment and Sustainability

Chapter	S – E	Learning Outcomes	Action Verbs	Learning Intentions	Units of Learning	Key Skills
Chapter 1 Health and Safety	PP – PM PP – Cr	1.4 Manage themselves and their resources 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials	Manage Apply	Understand the role of health and safety. Appreciate the importance of health and safety in the classroom and workshop. Appreciate the health and safety areas; person, place, process, and material. Identify the four categories for safety signs and their use. Reflect on the safety considerations for the user you are designing for.	Runs through all Units of Learning.	
Chapter 2 Sketching	PP – Co DT – Co	1.5 Represent key information graphically 1.6 Create sketches and working drawings to recognised standards using a variety of media 2.5 Communicate relevant information 2.6 Produce sketches, drawings and models/prototypes to explore design ideas	Represent Create Produce Communicate	Represent thoughts externally. Develop your communication skills. Produce sketches that illustrate your design thinking.	Runs through all Units of Learning.	
Chapter 3 Drawing	PP – Co DT – Co	1.5 Represent key information graphically 1.6 Create sketches and working drawings to recognised standards using a variety of media 2.6 Produce sketches, drawings and models/prototypes to explore design ideas	Represent Create Produce	Develop their communication skills. Produce drawings that illustrate your design thinking. Produce drawings representing technical draughtsmanship principles.	Runs through all Units of Learning.	
Chapter 4 Design as Creative Problem-Solving	PP – PM PP – ES DT – PM DT – Co	1.1 Explore key elements required for the completion of tasks 1.12 Appreciate sustainable practice throughout their learning 2.1 Explore design problems 2.4 Understand key principles of design and ergonomics 2.5 Communicate relevant information 2.7 Communicate a suitable approach to solving a problem 2.8 Compile a folio through appropriate media	Explore Appreciate Understand Communicate Compile	Understand the need to solve real-world problems. Understand the importance of the user in the problem-solving process. Identify design principles for good design. Produce creative design ideas using an iterative process to design.	Runs through all Units of Learning.	
Chapter 5 Exploration and Need-Finding	PP – PM PP – Co DT – PM DT – Co	1.1 Explore key elements required for the completion of tasks 1.5 Represent key information graphically 2.1 Explore design problems 2.5 Communicate relevant information 2.7 Communicate a suitable approach to solving a problem 2.8 Compile a folio through appropriate media	Explore Represent Communicate Compile	Identify real-world problems. Identify issues that need to be solved. Discover design problems. Explore design problems. Generate initial ideas. Communicate initial ideas.	Runs through all Units of Learning.	

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Chapter 6 Discovery and Analysis	PP – PM PP – Co DT – PM DT – Co DT – Cr	1.1 Explore key elements required for the completion of tasks 1.5 Represent key information graphically 2.1 Explore design problems 2.8 Compile a folio through appropriate media 2.9 Evolve their solutions based on critical reflection	Explore Represent Compile Evolve	Establish clear goals. Identify the problem criteria (requirements/specification).	Runs through all Units of Learning.	
Chapter 7 Research and Investigation	PP – PM PP – Co DT – PM DT – C DT – ES	1.2 Justify the selection of plans, processes and materials for the completion of tasks 1.5 Represent key information graphically 2.1 Explore design problems 2.2 Manage information and thinking to support an iterative design process 2.3 Evaluate their own progress to inform future learning 2.4 Understand key principles of design and ergonomics 2.5 Communicate relevant information 2.14 Investigate how to minimise material use and manage waste	Justify Explore Manage Evaluate Communicate Investigate Consider	Prioritise the requirements to be researched. Carry out thorough research. Explore the user requirements. Investigate similar design solutions. Communicate the information gathered. Identify the relevant information to address the problem. Demonstrate managing information and thinking. Justify the relevant information to support the problem-solving process.	Runs through all Units of Learning.	
Chapter 8 Idea Development	PP – PM PP – Co DT – PM DT – Co DT – Cr	1.3 Collaborate effectively in a workshop environment 2.1 Explore design problems 2.5 Communicate relevant information 2.6 Produce sketches, drawings and models/prototypes to explore design ideas 2.9 Evolve their solutions based on critical reflection	Collaborate Explore Communicate Produce Evolve	Understand the various approaches to support idea development. Explore a range of possible solutions. Communicate a range of possible solutions. Collaborate with peers to develop solutions. Apply the various approaches to evolve solutions. Reflect on problem criteria to find relevant solutions.	Runs through all Units of Learning.	
Chapter 9 Experimentation	PP – Co DT – PM DT – Co DT – Cr DT – ES	1.5 Represent key information graphically 2.2 Manage information and thinking to support an iterative design process 2.3 Evaluate their own progress to inform future learning 2.4 Understand key principles of design and ergonomics 2.6 Produce sketches, drawings and models/prototypes to explore design ideas 2.8 Compile a folio through appropriate media 2.10 Devise templates and models using various media 2.14 Investigate how to minimise material use and manage waste	Represent Manage Evaluate Understand Produce Compile Devise Investigate	Communicate internal thoughts to others through physical means. Make models to test things out. Figure out how you intend making something. Carry out experiments to test and try out suitable joints. Critique your solution, based on the needs of the problem. Produce models and prototypes to communicate your design thinking.	Runs through all Units of Learning.	
Chapter 10 Evolution Through Evaluation	PP – Co DT – PM DT – Co DT – Cr	1.5 Represent key information graphically 2.4 Understand key principles of design and ergonomics 2.8 Compile a folio through appropriate media 2.9 Evolve their solutions based on critical reflection	Represent Understand Compile Evolve	Critique your process and solution based on the needs of the problem. Iterate and evolve your design thinking.	Runs through all Units of Learning.	

Chapter 11 Species of Trees	WSM – PM	3.1 Identify common species of trees 3.2 Evaluate the characteristics and properties of common species of trees	Identify Evaluate	Identify the characteristics for the different species of trees. Identify the common species of trees. Discuss the positives and negatives of the various tree species. Evaluate tree species use based on the characteristics and properties.	UoL 1 UoL 2	
Chapter 12 Growth and Structure of Wood	WSM – PM WSM – Co	3.2 Evaluate the characteristics and properties of common species of wood 3.5 Explain the properties associated with the classification of wood	Evaluate Explain	Appreciate the shared characteristics and properties of hardwood and softwood trees. Describe the stages in the life cycle of a tree. Explain the process of photosynthesis. Recognise the different parts of a tree and understand their function or use. Identify and explain the differences between the cell structure of a hardwood and softwood tree.	UoL 3	
Chapter 13 Forests of Ireland and the World	DT – ES WSM – ES	2.14 Investigate how to minimise material use and manage waste 3.10 Appreciate the role of forestation and wood in terms of local/global ecology and sustainability 3.11 Investigate the use of wood from forest to end use 3.12 Consider the impact on the natural environment when sourcing materials	Investigate Appreciate Consider	Identify the main types of forests around the world. Describe each stage in a managed forest. Understand the difference between a managed forest and a sustainably managed forest. Appreciate the effects a monoculture forest can have on the natural environment, compared to a mixed forest. Explain the importance of the role that forests and trees have in a sustainable future for the natural environment. Appreciate the uses for the waste material produced in a managed forest. Recognise the importance and benefits of sustainable managed forests and sourcing wood from such forests.	UoL 4 UoL 5	
Chapter 14 Trees and the Environment	PP – ES WSM – ES	1.11 Investigate the environmental impacts of using wood as a natural and renewable resource 1.12 Appreciate sustainable practice throughout their learning 3.10 Appreciate the role of forestation and wood in terms of local/global ecology and sustainability 3.12 Consider the impact on the natural environment when sourcing materials	Investigate Appreciate Consider	Recognise the importance and benefits of using wood sourced from a sustainably managed forest. Understand some of the main causes of deforestation. Appreciate the effect of deforestation on the natural environment. Describe how trees help people to create sustainable and healthy living areas. Understand what their Carbon Footprint is and how they reduce it. Explain the importance trees have in creating a sustainable future for the natural environment.	UoL 5 UoL 6 UoL 7 UoL 10	
Chapter 15 Felling and Timber Conversion	PP – ES DT – ES WSM – Cr WSM – ES	1.12 Appreciate sustainable practice throughout their learning 2.14 Investigate how to minimise material use and manage waste 3.8 Utilise the natural aesthetics and properties of wood to enhance the appearance and function of an artefact 3.11 Investigate the use of wood from forest to end use 3.12 Consider the impact on the natural environment when sourcing materials	Appreciate Investigate Utilise Consider	Understand what conversion is and the reasons why it is needed. Recognise the different methods of conversion. Explain the advantages and disadvantages associated with each method of conversion. Display an understanding of the defects related to the felling and conversion of timber. Appreciate how defects can be used to enhance a project. Demonstrate an awareness of the different grain patterns each method of conversion can produce. Appreciate the amount of waste produced from the different conversion methods and understand the environmental considerations of this waste.	UoL 6	

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Chapter 16 Timber Seasoning	PP – ES WSM – ES	1.12 Appreciate sustainable practice throughout their learning 3.5 Explain the properties associated with the classification of wood 3.11 Investigate the use of wood from forest to end use	Appreciate Explain Investigate	Describe what timber seasoning is and the reasons for carrying it out. Appreciate the important role that seasoning has in terms of the sustainability. Display an awareness of the properties of wood in relation to moisture. Evaluate the most common methods of seasoning, especially in terms of environmental sustainability. Recognise the most common seasoning defects and describe how they can be prevented.	UoL 7	
Chapter 17 Manufactured Boards	DT – ES WSM – PM WSM – ES	2.14 Investigate how to minimise material use and manage waste 3.3 Understand the properties associated with a range of materials applicable to Wood Technology 3.12 Consider the impact on the natural environment when sourcing materials	Investigate Understand Consider	Recognise manufactured boards. Appreciate the environmental benefits of manufactured boards. Appreciate health and safety in the context of manufactured boards. Describe the properties and characteristics of different types of manufactured boards Demonstrate an understanding of the manufacturing process of manufactured boards. Evaluate the role of manufactured boards in the context of forestation.	UoL 1 UoL 2 UoL 6 UoL 7 UoL 8 UoL 9 UoL 10	
Chapter 18 Hand Tools	PP – PM PP – Co PP – Cr WSM – Cr	1.2 Justify the selection of plans, processes and materials for the completion of tasks 1.4 Manage themselves and their resources 1.7 Explain the function and application of a range of tools, equipment, fixtures and fittings 1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 3.9 Create an artefact that demonstrates an understanding of the properties associated with a range of materials applicable to Wood Technology	Justify Manage Explain Apply Create	Recognise and appreciate safety associated with the various processing hand tools. Discuss marking-out hand tools. Appreciate marking-out principles, such as face-side, face-edge and accuracy. Explain processing hand tools. Communicate an approach for planning tasks that use hand tools. Apply and demonstrate best practice to ensure craft excellence when using hand tools.	Runs through all Units of Learning.	
Chapter 19 Power Tools	PP – Co PP – Cr	1.7 Explain the function and application of a range of tools, equipment, fixtures and fittings 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials	Explain Apply	Identity and appreciate health and safety associated with a range of power tools. Communicate the function of the various power tools machines. Discuss the application of power tools with key consideration for safety. Produce tasks/artefacts that address a problem representing an appreciation for power tools.	UoL 1 UoL 2 UoL 3 UoL 4 UoL 5 UoL 7 UoL 8 UoL 9 UoL 10	
Chapter 20 Machines	PP – Co PP – Cr	1.7 Explain the function and application of a range of tools, equipment, fixtures and fittings 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 2.12 Create an artefact having considered factors such as materials, cost, time resources and skills 3.7 Justify the use of materials based on characteristics and properties within a context	Explain Apply Create Justify	Identity and appreciate health and safety associated with machines. Communicate the function of the various machines. Discuss the application of machines with key consideration for safety. Apply and demonstrate safe practice when producing tasks or projects.	UoL 2 UoL 3 UoL 5 UoL 6 UoL 7 UoL 8 UoL 9	

Chapter 21 Forces and Joints	PP – Cr	1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.9 Demonstrate principles of craft excellence through the design and realisation of tasks and artefacts 2.13 Recognise the environmental and social impacts of design decisions 3.7 Justify the use of materials based on characteristics and properties within a context	Apply Demonstrate Recognise Justify	Apply understanding from previous topics, such as wood types, grain orientation and strength. Understand the forces imposed on joints. Understand how to join wood. Identify the different joints. Identify appropriate uses for each joint. Communicate the environmental and social impacts of design decisions the different joints with the use of sketches. Produce joints that address the environmental and social impacts of design decisions.	Runs through all Units of Learning.	
Chapter 22 Fixtures and Fittings	PP – Co PP – Cr DT – Cr WSM – Co	1.7 Explain the function and application of a range of tools, equipment, fixtures and fittings 1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 2.12 Create an artefact having considered factors such as materials, cost, time resources and skills 3.7 Justify the use of materials based on characteristics and properties within a context	Explain Apply Create Justify	Recognise the most common types of fixtures and fittings in your environment. Appreciate when to use a fixture or fitting for a given task or project. Demonstrate an understanding of the function of fixtures and fittings. Evaluate the fixtures and fittings to choose the most appropriate for a given task or project. Describe how different fastening or fixtures should be correctly fitted.	UoL 1 UoL 6 UoL 7	
Chapter 23 Woodturning	PP – Co PP – Cr	1.7 Explain the function and application of a range of tools, equipment, fixtures and fittings 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 2.12 Create an artefact having considered factors such as materials, cost, time resources and skills 3.7 Justify the use of materials based on characteristics and properties within a context	Explain Apply	Identity the health and safety associated with woodturning. Investigate and explain the different forms designed and made on the lathe. Appreciate the different profiles achievable on the lathe. Appreciate factors such as materials, cost, time resources and skills. Plan and manage the set-up and use of the lathe for woodturning.	UoL 6 UoL 9	
Chapter 24 Bending and Laminating	PP – Cr PP – ES DT – Cr DT – ES WSM – Cr WSM – Cr	1.12 Appreciate sustainable practice throughout their learning 2.14 Investigate how to minimise material use and manage waste 3.8 Utilise the natural aesthetics and properties of wood to enhance the appearance and function of an artefact 3.9 Create an artefact that demonstrates an understanding of the properties associated with a range of materials applicable to Wood Technology	Appreciate Create Investigate Utilise	Recognise and understand each of the different methods of bending and laminating wood. Display a knowledge of the processes and equipment associated with each method. Appreciate the most suitable material for a particular bending or laminating task considering factors such as time, equipment and sustainability. Demonstrate an appreciation of how bending wood may be utilised to enhance a task or project. Appreciate how bending and laminating wood is an example of good sustainable practice.	UoL 5 UoL 6 UoL 8	

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Chapter 25 Carving	PP – PM PP – Co PP – Cr DT – Cr WSM – Cr	1.7 Explain the function and application of a range of tools, equipment, fixtures and fittings 1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.9 Demonstrate principles of craft excellence through the design and realisation of tasks and artefacts 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 3.8 Utilise the natural aesthetics and properties of wood to enhance the appearance and function of an artefact	Explain Apply Demonstrate Utilise	Recognise the hand tools and equipment that can be used in the carving process. Understand the functions of the relevant hand tools and equipment and how to correctly apply them. Demonstrate an understanding and knowledge of different types of carving and the processes and techniques associated with each type. Understand and appreciate the health and safety guidelines to follow. Demonstrate an appreciation of how carving may be utilised to enhance a task or artefact. Consider factors such as materials, cost, time resources and skills.	UoL 4 UoL 5 UoL 6 UoL 9	
Chapter 26 Scrollwork	PP – PM PP – Co PP – Cr DT – Cr	1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 2.10 Devise templates and models using various media	Apply Devise	Identify the health and safety issues associated with scrollwork. Recognise the tools and equipment that can be used in scrollwork. Appreciate the different geometry or forms achievable in the context of scrollwork. Produce templates to transfer designs onto material for processing by scroll saw. Plan and manage materials for scrollwork.	UoL 4 UoL 7	
Chapter 27 Veneer Work	PP – PM PP – Co PP – Cr PP – ES DT – Cr WSM – Cr	1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 1.12 Appreciate sustainable practice throughout their learning 2.10 Devise templates and models using various media 3.8 Utilise the natural aesthetics and properties of wood to enhance the appearance and function of an artefact	Apply Appreciate Devise Utilise	Identify the health and safety issues associated with veneer work. Recognise the tools and equipment used in veneer work Appreciate the different geometry or forms achievable in the context of veneer work. Produce templates to transfer designs onto material for processing using veneers. Plan and manage materials for veneer work. Appreciate that using veneers is an example of good sustainable practice.	UoL 3 UoL 4 UoL 6 UoL 7 UoL 8 UoL 9	

Chapter 28 Alternative Materials	PP – Cr PP – ES DT – ES WSM – PM WSM – Co WSM – Cr WSM – ES	1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 3.3 Understand the properties associated with a range of materials applicable to Wood Technology 3.4 Evaluate the use of wood in comparison to alternative materials 3.6 Discuss the use of wood in comparison to alternative materials 3.12 Consider the impact on the natural environment when sourcing materials	Apply Understand Evaluate Discuss	Understand and apply the relevant health and safety practices associated with alternative materials. Recognise the most common types of metals and plastics. Evaluate the basic properties and uses of metals and plastics in comparison to wood. Appreciate how alternative materials could be used to help solve a design problem or enhance a project. Describe the social and environmental impacts of using alternative materials such as metal and plastics to help solve a design problem or enhance a project.	UoL 2 UoL 3 UoL 4 UoL 5 UoL 6 UoL 7 UoL 8 UoL 10	
Chapter 29 Adhesives	PP – PM PP – Cr DT – Cr WSM – ES	1.2 Justify the selection of plans, processes and materials for the completion of tasks 1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 2.11 Produce purposeful, functional, appealing artefacts 2.12 Create an artefact having considered factors such as materials, cost, time resources and skills 3.12 Consider the impact of the natural environment when sourcing materials	Justify Apply Produce Create Consider	Display an understanding of the different types of adhesives that could be usedto create an artefact. Demonstrate an understanding of the properties and uses of different adhesives. Evaluate the different methods of applying adhesive. Understand and appreciate the health and safety guidelines when using an adhesive.	UoL 2 UoL 3 UoL 4 UoL 5 UoL 7 UoL 8 UoL 9 UoL 10	
Chapter 30 Finishes	PP – Cr PP – ES DT – Cr	1.8 Apply knowledge of and skills in a range of appropriate existing and emerging principles, processes and techniques 1.10 Apply recognised health and safety practices in the use of tools, equipment and materials 1.12 Appreciate sustainable practice throughout their learning 2.12 Create an artefact having considered factors such as materials, cost, time resources and skills 3.9 Create an artefact that demonstrates an understanding of the properties associated with a range of materials applicable to Wood Technology 3.12 Consider the impact on the natural environment when sourcing materials	Apply Appreciate Create Consider	Understand and appreciate the health and safety when using applied finishes in the Wood Technology room. Recognise the different types of applied finishes available. Demonstrate an understanding of the process involved in preparing a wooden artefact for an applied finish. Appreciate the impact certain finishes and preservatives can have on the natural environment and identify the more sustainable alternatives available. Evaluate the properties of the different types of finish available and identify the most appropriate for a task or artefact.	Runs through all Units of Learning.	

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CUTTING LISTS

PROBLEM 1: SCISSORS HOLDER		
Part	Dimensions	QTY.
Front holder	250 × 44 × 18	1
Backing board	250 × 110 × 6	1
Screws	User specified	2

PROBLEM 2: KEY HOLDER		
Part	Dimensions	QTY.
Back holder	250 × 44 × 18	1
Wooden keyring	40 × 64 × 9 (overall: 150 × 64 × 9)	3 1
Screws	User specified	2
Keyring	User specified	3

PROBLEM 3: MINI ROBOT TOY (DOWEL VERSION)		
Body	75 × 70 × 70	1
Arms	70 × 44 × 20	2
Screw	3.5 × 352	2
Head	75 × 70 × 44	1
Dowel	Ø8 × 30	2
Feet	70 × 30 × 20	2
Dowelled legs	50 × 44 × 30	2
Dowel	Ø9 × 50	1

PROBLEM 3: MINI ROBOT TOY (CORD VERSION)		
Head	75 × 70 × 44	1
Corded body	70 × 70 × 75	1
Corded hands	50 × 44 × 30	2
Legs	50 × 44 × 30	2
Feet	70 × 30 × 20	2
Dowel	Ø9 × 45	1

PROBLEM 4: LETTER ORGANISER		
Base	120 × 44 × 18	2
Vertical divider	150 × 140 × 12	1
Dowel	Ø9 × 110	4

PROBLEM 5: PENCIL HOLDER		
Base	230 × 44 × 30	1
Pencil/pen holder	80 × 44 × 30	1
Back piece	80 × 44 × 20	1
Dowel	Ø6 × 30	1

PROBLEM 6: CHILD'S GAME		
Base leg	250 × 44 × 18	2
Dowel	Ø9 × 110	5

PROBLEM 7: KEY HOLDER		
Cross halving pieces	140 × 44 × 20	2
Dowel	Ø9 × 100	1
Plane wing	170 × 44 × 20	1
Plane body	220 × 44 × 20	1

PROBLEM 8: BOOK ORGANISER		
Vertical support	150 × 140 × 15	2
Base	150 × 140 × 15	2
Theme piece	140 × 140 × 15	1
Dowel	Ø6 × 30	2

PROBLEM 9: PHONE HOLDER		
Base	130 × 125 × 15	1
Back	150 × 125 × 15	1

PROBLEM 10: SWEET/NUT DISPENSER		
Base	170 × 130 × 15	1
Front and back pieces	140 51 × 15	2
Side pieces	100 × 51 × 15	2
Top	140 × 100 × 1	1
Dispenser	230 × 44 × 20	1
Dowel	Ø6 × 30	4

PROBLEM 11: PENCIL/MAKEUP BRUSH HOLDER		
Back piece	135 × 44 × 20	1
Side pieces	210 × 44 × 20	2
Front piece	115 × 44 × 20	1
Pencil holder base	165 × 125 × 15	1
Dowel	Ø9 × 38	1

PROBLEM 12: TISSUE BOX COVER		
Long side	254 × 30 × 12	4
Short side	134 × 30 × 12	4
Lid	254 × 134 × 12	1

PROBLEM 13: FRUIT HOLDER		
Base	150 × 150 × 18	1
Veneer (contrasting colour)	150 × 150 × 1	2
Former template (MDF)	As required	1
Laminate strips	As required	3
Hook	As required	1

PROBLEM 14: HEADPHONES AND PHONE HOLDER		
Base	140 × 120 × 18	1
Phone support	190 × 44 × 30	1
Headphone laminates	As required	1
Former template (MDF)	As required	1
Screw	3.5 × 35	1
Lip	50 × 20 × 18	1

PROBLEM 15: CLOCK DISPLAY		
Base	220 × 88 × 18	1
Vertical rail	220 × 44 × 18	1
Laminate rail (Laminate strips)	360 × 30 × 3	4
Former template	As required	1
Top spindle	130 × 50 × 50	1
Clock backing board	170 × 130 × 12	1
Dowel	Ø6 × 30	3
Support laths	100 × 5 × 5	2
Clock mechanism	58 × 58 × 16	1

PROBLEM 16: TABLET SUPPORT		
Side pieces	240 × 44 × 20	2
Top and bottom pieces	340 × 44 × 20	1
Plywood groundwork	320 × 220 × 4	1
Veneers	320 × 220 × 1	2

PROBLEM 17: PHOTO FRAME HOLDER		
Base	200 × 100 × 18	1
Centre beam	400 × 40 × 40	1
Frame hanger short	160 × 20 × 20	2
Frame hanger long	210 × 20 × 20	1
Acrylic photo protector	178 × 127 × 3	6
Butterfly clips/String	As required	6

PROBLEM 18: PHOTO FRAME		
Base	360 × 90 × 18	1
Side pieces	250 × 44 × 30	2
Top	300 × 44 × 30	1

PROBLEM 19: PERSONAL ITEMS HOLDER		
Base	270 × 70 × 18	1
Side pieces	150 × 70 × 18	2
Plywood back	270 × 200 × 6	1
Divider	90 × 70 × 15	1
Phone holder	110 × 44 × 44	1

PROBLEM 20: PORTABLE TRAY		
Front and back	340 × 44 × 20	1
Side pieces	240 × 44 × 20	2
Plywood groundwork	320 × 220 × 6	1
Veneers	320 × 220 × 1	1
Laminated handles	As required	2

PROBLEM 21: SUPPORT STAND		
Base	180 × 180 × 36	1
Support	190 × Ø70	1
Top	210 × 210 × 18	1
Lip	170 × 20 × 20	1
Dowel	Ø9 × 30	2
Screw	35 × 3.5	1

PROBLEM 22: BUG HOTEL		
Base	136 × 100 × 18	1
Back	150 × 136 × 18	1
Side	208 × 100 × 18	2
Top	136 × 136 × 3	1
Dowel	Ø6 × 15	6

GUIDANCE ON THE CLASSROOM–BASED ASSESSMENTS

Classroom–Based Assessment 1: Wood Science in Our Environment

Format	Student preparation
Investigation and presentation on a Wood Science related topic. Response may be presented in a wide range of formats. Students can collaborate, but each student must present an individual piece of work.	During a maximum of three weeks with support/ guidance from teacher.

In Classroom-Based Assessment 1 (CBA 1) students explore the world around them to develop ideas for a topic in the context of 'Wood Science in our Environment'. The topic can explore an issue within a local or global context. For example an exploration of the 'managed forest cycle' of a local forest could include information about the effect of this forest on the local ecology, or thinking of ideas or solutions to support the local ecology.

While this CBA is primarily focused on the 'Wood Science and Materials' strand, the chosen topic can incorporate aspects and related issues from the 'Principles and Practices' and 'Design Thinking' strands.

To help structure their approach to the Classroom-Based Assessment, the students should focus their work through the lens of:

- research and analysis
- concepts and application
- evaluate their findings
- communicating their Classroom-Based Assessment.

Students will capture the work completed at each of these stages in a learning log that will be presented as part of their final submission. Students may also present models, artefacts and any other form of evidence to accompany the learning log to further communicate their findings if they feel it is necessary.

Research and analysis

This is where the student demonstrates and develops their research skills. Once the student has decided on a topic (in consultation with their teacher), they should analyse their ideas by brainstorming. The chosen topic can be framed in questions or statements. The student must then gather information from different sources (primary and secondary) to research their chosen topic. It is important that each student records the source(s) of the information gathered in order to assess its reliability and quality, and to ensure that the sources used can be referenced. They should be encouraged to search effectively, evaluate and synthesise material.

Concepts and application

Once the research has been conducted, the students should relate their findings to key concepts of their chosen topic. The student should be encouraged to consider other related concepts to help develop their response. They should draw on existing knowledge and research to make links to local and/or global issues.

Evaluating their findings

Encourage students to evaluate what they have learned about the topic they focused on and reflect on the process that led them from start to finish of their submitted work. They could:

- Explore the importance of the topic for personal, local, social or environmental relevance.
- Assess if they were they able to apply their knowledge, understanding and ideas to the chosen topic.
- Explain different opinions related to the chosen topic where appropriate.
- Reflect on what they thought about before engaging in the research process and what they think now.
- Think about how the learning gained from CBA 1 can be applied in their future classroom activities.

The student should aim to develop a personal opinion or draw definite conclusions from the learning experienced through engagement with the CBA.

Communicating their Classroom–Based Assessment

Each student will present what they have learned having investigated a topic of their choice through their learning log. The information should be presented in their own words to demonstrate personal understanding of the knowledge and ideas relevant to the chosen topic. Students should be encouraged to identify which information best communicates their work and choose the most suitable medium in which to present it. For example, the learning log could be presented in written, digital, visual or audio formats.

The photocopiable template on pages 47–50 offers some possible headings that students may include in their learning log to support them in communicating their research skills for CBA 1 'Wood Science in our Environment'.

CLASSROOM–BASED ASSESSMENT 1: WOOD SCIENCE IN OUR ENVIRONMENT

Choosing a stimulus/topic

A. Choose a setting for your research.

Local context	Global context
i.e. your town, village, county or in Ireland	*i.e. another country, area of another country, city, etc.*

B. Identify some possible Wood Science related stimuli/topics from either a local or global context.

Local context	Global context
Stimulus/topic	*Stimulus/topic*
e.g. monoculture forestry in my area	*e.g. major reforestation or afforestation programme in another country*

See the end of chapters 13, 14, and 15 for examples of stimuli/ topics you could explore.

C. Choose one stimulus/topic that you would like to explore for CBA 1.

The topic I am choosing is: _____

_____

_____

_____

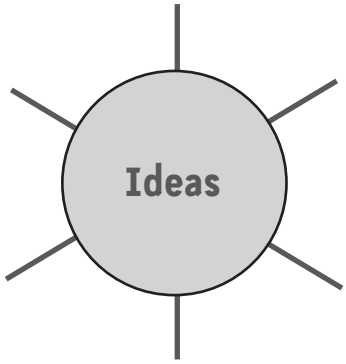
Share and discuss your chosen topic with at least one of your classmates and your teacher.

Reflection: Checklist

	Yes	No
Am I interested in exploring the topic further?		
Can the topic be researched?		
Is this topic suitable for exploring in the context of the Wood Science in our Environment?		

Research and analysis

A. Define and analyse your ideas: Create a mindmap to brainstorm key words, phrases and other pieces of information to assist your research of the topic.



Based on your brainstorm of key words, phrases, and other pieces of information, frame the topic in questions or statements.

Questions:	Statements:

B. Reflect: Outline why you selected this topic.

Reason 1:	Reason 2:

C. Existing knowledge: What do you already know about the topic?

Existing knowledge:

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D. Method of Research: Where can you find out more information about the topic?

Where (list your sources of information):	Explain briefly why you have chosen your method(s) of research:

Concepts and application

A. Relate your findings to key concepts of your chosen topic.

Give a brief summary of what you found out as a result of your research: *Remember to reference your sources

B. Investigation: What other questions does the topic raise for you?

Question 1:	Question 2:

C. Consider other related concepts to help refine or develop your response to the topic.

Related concept 1:	Related concept 2:

Evaluate your findings 

Think critically about what you have learned about the topic.

(a) What information surprised you?
(b) How is the source of your research reliable?
(c) Is the information one-sided or biased? Give a reason for your answer.

Conclusion: Based on your findings, what are your key observations?

Key observations:

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Classroom–Based Assessment 2: Student Self-Analysis and Evaluation

Format	Student preparation
Individual analysis of their own skills. Response may be presented in a wide range of formats.	During a maximum of three weeks, with support/ guidance from teacher.

See Chapter 10 Evolution and Evaluation for more support on this CBA 2.

In Classroom-Based Assessment 2 (CBA 2) students will individually conduct an analysis of their coursework and skills to date in Wood Technology. They will focus their self-analysis and evaluation on a range of completed tasks or on a specific task. They will critically review their progress and identify areas of strength and areas for improvement, with a view to informing their planning and decisions for the State Examination Commission Project.

To help structure their approach to the Classroom-Based Assessment, the students should focus their work through the lens of:

- identifying coursework elements
- reflecting on learning
- communicating their Classroom-Based Assessment.

Identifying coursework elements

Students should retain some evidence of projects they have completed in first and/or second year to offer them supporting stimulus to conduct their analysis and evaluation. The evidence does not require the student to retain the physical project, only aspects of the work that may assist the student in completing the Classroom-Based Assessment. The Projects Section in the *Project and Activity Book* acts as evidence and greatly supports students' preparation for CBA 2.

Once students have identified a piece or range of work to focus on, they should identify various coursework elements associated with the work to help them make judgements.

Reflecting on learning

Once students have conducted their self-analysis and evaluation, they are required to make judgements based on their analysis. These judgements are intended to help students reflect on their skills to date and assess their areas of strength and areas for improvement in order to increase awareness of their own skillset prior to the State Examination Commission Project.

Communicating their Classroom–Based Assessment

Each student will present what they have learned having conducted the self-analysis and evaluation of their work to date. The information should be presented in their own words to demonstrate personal understanding of the knowledge and ideas relevant to them personally. Students should be encouraged to identify which information best communicates their work and choose the most suitable medium in which to present it. For example, it could be presented in written, digital, visual or audio formats.

The photocopiable template on pages 52–54 provides headings that can be used to support students in communicating their self–evaluation and reflection skills for CBA 2 'Student Self–Analysis and Evaluation'.

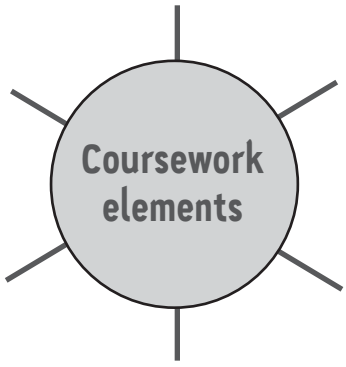
CLASSROOM–BASED ASSESSMENT 2: STUDENT SELF–ANALYSIS AND EVALUATION

Identifying coursework elements

A. Explore your completed tasks (problems): Identify a piece of work or a range of work you have completed, to focus your self-analysis and evaluation on.

Identified completed task or tasks:

B: Identify coursework elements: Create a mind map showing what you learned and skills you developed in completing the task or tasks?



C. Reflect: Use the spaces provided to compile your areas of strength and areas for improvement related to the suggested listed coursework elements.

Areas of Strength *In the context of your task(s), reflect on your areas of strength in:*	**Areas for Improvement** *In the context of your task(s), reflect on your areas for improvement in:*
Need-finding: _____ _____ _____	Need-finding: _____ _____ _____

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Areas of Strength *continued* *In the context of your task(s), reflect on your areas of strength in:*	**Areas for Improvement *continued*** *In the context of your task(s), reflect on your areas for improvement in:*
Initial ideas:	Initial ideas:
Analysis:	Analysis:
Research:	Research:
Investigation:	Investigation:
Developed ideas:	Developed ideas:
Experimentation:	Experimentation:
Realisation; hand skills, power/machine skills:	Realisation; hand skills, power/machine skills:
Evaluation during the task/problem:	Evaluation during the task/problem:
Evaluation at the end of the task/problem:	Evaluation at the end of the task/problem:

Reflecting on learning

Make critical judgements based on your analysis, above. These judgements are intended to inform future decisions in terms of areas of strength and areas for improvement.

The area of strength I would like to analyse and evaluate further is:	The area for improvement I would like to analyse and evaluate further is:

Reflect: Outline 'How' and 'Why' the Area of Strength and Area of Improvement above will feed into your planning and decisions for the Junior Cycle Project.

Areas of Strength	Areas for Improvement
How: _____	How: _____
_____	_____
_____	_____
Why: _____	Why: _____
_____	_____
_____	_____

Share and discuss each of your areas with at least one of your classmates. Use your answers from the previous reflections to guide your discussion.

Conclusion: Going forward, how will this self-analysis and evaluation support your future classwork?

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