Nowra High School: Unit of work Technology (Mandatory)

<table>
<tr><td>Unit Title: Nowra High herbs (Unit 2b)</td><td>Length of unit: 20 weeks – 4 x 50 minute periods</td></tr>
<tr><td>Area of study: Products
Design specialisation: Industrial design.
Technologies: Metals technologies and timber technologies.
Design project: Design and produce a container for use in your home that will hold herbs grown at school.</td><td rowspan="2">Outcomes:
Focus outcomes:
4.1.1 applies design processes that respond to needs and opportunities in each design project.
4.1.3 identifies the roles of designers and their contribution to the improvement of the quality of life.
4.2.1 generates and communicates creative design ideas and solutions
4.3.1 applies a broad range of contemporary and appropriate tools, materials and techniques with competence in the development of design projects
4.3.2 demonstrates responsible and safe use of a range of tools, materials and techniques in each design project.
4.4.1 explains the impact of innovation and emerging technologies on society and the environment
4.5.1 applies management processes to successfully complete design projects
4.6.1 applies appropriate evaluation techniques throughout each design project

Contributing outcomes:
4.1.2 describes factors influencing design in the areas of study of Built Environments, Products and Information and Communications
4.2.2 selects, analyses, presents and applies research and experimentation from a variety of sources
4.5.2 produces quality solutions that respond to identified needs and opportunities in each design project
4.6.2 identifies and explains ethical, social, environmental and sustainability considerations related to design projects.</td></tr>
<tr><td>Unit description:

In 2003, students at Nowra High School designed and built large garden beds, for the growing of herbs for use in Design and Technology, Food Technology and Hospitality classes.

Year 7, 2004 will be the first group of students to see the benefits of this garden, by undertaking a design project that will allow them to plant the herbs grown, in planter boxes they have designed and constructed themselves.

The focus will be upon the specialisation of industrial design, as students will design and produce a piece of furniture, that will hold a container of herbs, for use and display in their home.

Design and produce a container for use in your home that will hold herbs grown at school.</td></tr>
<tr><td>Resources:
References:
Ableson, B and Pateman, A (1988) Metalworking Part One, McGraw-Hill Book Company, Sydney.
Ableson, B and Pateman, A (1989) Metalworking Part Two, McGraw-Hill Book Company, Sydney.
Better Homes and Gardens (1996) A Grower's Guide to Herbs, Murdoch Books, Sydney
Gray, T and McCormick, T (1989) Metal Technic, The Jacaranda Press, Milton, Qld.
Gray, T and McCormick, T (1989) Wood Technics, The Jacaranda Press, Milton, Qld.
Hemphill, J & R, Herbs. Their Cultivation and Usage, Lansdowne Press
Hill, J and Scott, E (1997) Working in Wood. An Introduction, Reed Books, Melbourne.
Leadbeatter, B, Leadbeatter, M, Keable, J. (1990) Woodworking Part One, McGraw-Hill Book Company, North Ryde.
Leadbeatter, B, Leadbeatter, (2001) Woodworking Part Two, McGraw-Hill Book Company, Roseville.
Walton, J (1979) Woodwork in Theory and Practice, Random House, Milsons Point.
Magazines
Better Homes and Gardens Magazine, Murdoch Magazines, Sydney
Burkes Backyard Magazine, Burke's Backyard Publishing, Chatswood</td><td>Videos:
Video Education Australia (2001) Safety in Technology Workshops: Working with Wood, Metal and Plastic, Bendigo Victoria
Video Education Australia (1994) Recycling Processes, Bendigo Victoria
Web sites:
BHG Australia: Better Homes and Gardens
www.bhg.com.au
Burke's Backyard- Home
www.burkesbackyard.com.au
SRD Home Page
www.green.net.au/srd
Excursions:
It's a Wrought, 38 Mimosa Park Road, Milton, Ph: 4454 1265
Nowra Pine Factory, 54 Railway Street, Bomaderry, Ph: 4421 5305
Plants Plus – Nowra Garden Centre, Princes Hwy, Bomaderry, Ph: 4423 1799
Shoalhaven Nursery, 135 Terara Road, Terara, Ph: 4423 4788.
Wirin Wirra Native Plants, 72 Hill Street, Tomerong, Ph: 4443 4029.
Wreck Bay Enterprises Ltd. C/- Visitor Information Services, Booderee National Park, Jervis Bay Ph: 4442 1029
Yard n' Garden, Princes Hwy, South Nowra, Ph: 4421 0601</td></tr>
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Students learn about:	Students learn to:	Integrated learning experiences and resources	Evidence of learning	Teacher evaluation and registration
		Weeks 1–2		
Focus Outcome 4.1.1 • design processes.		• Introduction to central unit Nowra High Herbs. Students indicate if they would prefer to undertake 2a or 2b. • Overview of design process. • Brainstorm components of the design process (investigating, designing, producing, and evaluating. • Review key concepts learnt in Semester 1.	Recall design processes used in semester 1.	
Focus Outcome 4.1.3 • relationship of design to the areas of study of Built Environments, Products and Information & Communications. • different design specialisations. • the nature of the work of designers as individuals and as collaborators.	• identify relationships of design to each of the areas of study. • describe the nature of each area of study of Built Environments, Products and Information and Communications. • identify a range of design specialisations relevant to each area of study. • apply group work and collaborative strategies to project development.	• Small group design activity, (Design Target Activity Sheet). Presentation to class. • Brainstorm – who uses a design process? Designers who work in a range of design specialisations. • In groups, compile a list of design specialisations linked to each area of study: Products, Information & Communications, Built Environments. • View video: *Axis Kettle*. Designers involved in product design that is greatly influenced by environmental sustainability. • Internet Search: Society for responsible design, www.green.net.au/srd. Report on the contributions being made by designers to improve the environment. • Assessment Task – Designers and their work. In groups, students to select one design specialisation they are interested in. Research and write a report on a designer who has had success in that area of design. Prepare a multimedia	Presentation of design activity. Each group to report of their findings. Class list of design specialisations for each area of study displayed in the classroom. Video worksheet. Internet report. Report and multimedia presentation on designer and their work.	

		presentation. • Guest Speaker/s: Work and training opportunities within the Shoalhaven for designers: – careers adviser – TAFE adviser – local designer e.g. Sydney Yachts. – ex-student/s e.g Amy Coulthart, Drew Rosskelly, Bonnie Rozorio, Jackson Wicks.		
		Weeks 3–4		
Focus Outcome 4.2.1 • using ICTs to plan, develop and document design projects.	• compose a design folio for a specific audience in electronic format including features such as tabs, indents, headers and footers, margins and line and paragraph spacing and using appropriate layout and graphic design. • use word processing features including page numbering and page breaks, find and replace, word count, spell check and thesaurus, columns and sections, inserting text/object/images.	• Introduction to design brief and design folio. • Students to compose a design folio on the computer.	Documentation of each stage of the design process undertaken, to meet the requirements of the brief in design folio.	
Focus Outcome 4.1.1 and 4.2.1 • Design processes including – analysing needs, problems and opportunities. • Methods used to generate creative design ideas including – brainstorming – mind mapping – sketching and drawing – modelling – experimenting and	• establish a design process that responds to an identified need and opportunity. • identify needs and opportunities that require solutions in the areas of study. • use a variety of methods to generate creative design ideas for each design project.	• Brainstorm requirements of the design brief. What is the brief asking you to do? • Develop a mind map of needs and opportunities as determined by the brief.	Ongoing folio documentation – computer generated.	

testing.				
Focus Outcome 4.1.1 • Design processes including: – establishing criteria for success – researching – communicating ideas – managing resources	• apply a design process when developing quality solutions for each design project. • establish criteria for successful achievement of needs and opportunities. • record design processes and decision making in a design folio for each design project.	• Research the types of herbs that will suit being planted in a container and the factors that will contribute to the success of the final design. • In groups, determine criteria needed to ensure the finished herb container will be a success. Share criteria with the class. • Design a survey to give to parents to determine their needs with regards to the placement of the herb container and stand – indoors/outdoors, types of herbs used frequently at home. Analyse survey results, prior to establishing final criteria for success.	Documentation of ideas in design folio. Presentation of criteria for success to class. Documentation of criteria in folio. Survey design and collated results.	
Focus Outcome 4.5.1 Resource availability including: – time – money – materials, tools & techniques – human resources including skills and expertise. – other resources	• identify resource availability and apply realistic limitations to each design project.	• Discuss time, budget considerations, human and non human resources available and document this overview in design folio. • Complete a time, action and finance plan for their project using a computer based spreadsheet. • Print a copy of the plans for design folio.	Documentation of plans in folio. Time, action and finance plans in design folio.	
Contributing Outcome 4.1.2 • factors affecting design – **function** – aesthetics – human form – **scale** – ergonomics – ethical – environmental – legislation including OHS – **cost** – socio-cultural – **resource availability**	• describe the factors affecting design in the development of each design project.	• Complete a Consider all factors (CAF) activity in design folio. • Excursion: *Nowra Pine Factory* and/or *It's a Wrought*, examine the factors furniture designers must consider when designing and producing to meet specific client needs. • Examine industrial production methods used.	CAF completed in folio. Excursion Report.	

– physical and material properties – safety.				
		Weeks 5–6		
Focus Outcome 4.2.1 • methods used to generate creative design ideas including – mind mapping – brain storming – **sketching and drawing** – **modelling** – **experimenting and testing.** • use of design folio to record and reflect on design ideas and decisions. • communication methods including – **drawings, sketches** and models – written reports – **oral presentations** – digital presentations. • communication methods suitable for specific audiences including – users and clients – technical experts – peers. • using ICTs to plan, develop and document design projects.	• use a variety of methods to generate creative design ideas for each design project. • use a design folio to record and reflect on design ideas and decisions. • sketch, draw and model to aid design development. • manipulate images with tools such as editing, resizing, grouping, aligning and positioning. • communicate information appropriate to specified audiences. • use ICTs to communicate information including saving a document in various file types and storage locations from within the application.	• Guest speaker - local horticulturalist. Discussion of conditions needed for successful growth and maintenance of herbs in containers. • Demonstrate methods for drawing and sketching design ideas. (pictorial using isometric grid sheets and orthographic) • Create a model using paper and cardboard and then draw the initial design idea. Take design home for evaluation by parents. • Students to revise designs based upon evaluation by parents and teacher. Evaluate the design in terms of criteria for success and the needs of the target market, size, placement in home environment, cost and resources available. • Students with similar designs to form teams.	Drawings completed in folio. Paper /cardboard model of herb container and stand. Ongoing folio documentation – computer generated. Oral presentation of final design idea to class.	
Contributing Outcome 4.2.2 • relationship of experimentation to success criteria. • research methods – needs analysis – surveys and interviews – searching techniques including use of the Internet	• apply the results of experimentation to designing and making when developing each design project. • use effective research methods to identify needs and opportunities and locate information relevant to the development of each design project.	• Final design drawing to be completed using CAD. Discuss how the communication of their design will be influenced by the intended audience. Save their design to user storage space on school intranet.	Observation – selection of final design.	

		Week 7		
Focus Outcome 4.3.1 **Timber Technologies** **Materials** • characteristics and properties of timber, timber products • a range of appropriate fittings and hardware such as hinges, handles, catches and locks. **Metals Technologies** **Materials** • characteristics and properties of metals including alloys and sheet metals • a range of appropriate fittings and hardware	• Identify, select and use appropriate materials for a design project • select and use metals in the development of a design project. • Investigate and use accessories where appropriate for a design project.	• Selection of materials for herb container and stand. • Research task – in teams and using the resources provided compile a list of timbers and metals that have properties suited to the design task. Each team to outline the properties of four timbers and four metals. Investigate and record the fittings and hardware needed for successful completion of the design task. Students negotiate with teacher regarding timber to be used for herb container and metal to be used for the herb stand.	Presentation of research task. Ongoing design folio documentation – computer generated.	
Focus Outcome 4.4.1 • innovation and emerging technologies relating to tools, materials, techniques or products in each area of study. • the impact of innovation and emerging technology on society and the environment.	• identify and describe a selected innovation or emerging technology in each area of study of Built Environments, Products, and Information and Communications • explain the impact of innovations and emerging technologies on society and the environment including new ICTs	• Discussion of new technologies in metals and timber including laser scanning, (stress testing of timber) and electroplating and powder coating of metals, (for example, Colour Bond). • Students to use new technologies in the recording of production steps as a procedure text type. Take digital photographs of production steps for inclusion in design folio.	Procedure of production steps. Inclusion of digital photography.	
		Weeks 8–12		
Focus Outcome 4.3.1 **Timber Technologies** **Tools** • specific tools related to timber technologies. • the function, selection and correct use of a range of contemporary tools used for	• select and correctly use tools of timber technology for a design project.	• Construction of herb container. • Handout: Cloze passage – tools of timber technology their use and the required maintenance for each tool. • Teacher demonstration of each tool. Students to demonstrate safe use of tools		

– marking out and measuring – cutting – joining – finishing including abrasives. • machine tools including scroll saw, drill press and disc sanding machines.				
Focus Outcome 4.3.2 • risk management strategies. • responsible behaviour in working environments. • Occupational Health and Safety practices • the safe and responsible use of materials, tools and techniques in each design project. • maintenance of tools and equipment.	• manage risk when developing design projects. • use tools, materials and techniques in a responsible and safe manner in each design project. • maintain tools and equipment including computer equipment.	• Watch video: *Safety in technology workshops.* • Develop class safety policies to follow when working in the timber and metals workshops. In teams, design a poster with safety issues outlined for class display. • Handout work sheet: How to safely use timber technology and metals technology tools. • Students to complete a safety test.	Video Worksheet. Policy to be displayed in design folio. Posters to be displayed in classroom. Safety Test.	
Focus Outcome 4.3.1 **Timber Technology Techniques** • Construction techniques including – cutting – shaping – finishing. Focus Outcome 4.1.1 • Design processes including experimenting and testing ideas Focus Outcome 4.3.1 **Timber Technology Techniques** – Industrial production methods	• cut, shape and finish timber or timber products. • select and use appropriate techniques for the purposes of a design project. • use appropriate surface preparations and finishes for a design project.	• Teacher demonstration of each technique. • Students to experiment with and test various techniques to achieve quality, then demonstrate selection and use of appropriate techniques through the production of their herb container. • Consider criteria to evaluate success when making design decisions. • Compare the class group production method, with the methods used at Nowra Pine Factory. Discuss reasons for differences.	Participation in production activities. Ongoing design folio documentation – (computer generated) procedure for production. Findings presented as a report in folio – computer generated. Observation of class discussion.	
Weeks 13–16				
Focus Outcome 4.3.1 **Metals Technologies Tools** • Specific tools relating to metals technologies.	• select and correctly use tools appropriate hand and	• Construction of herb container stand. • Investigate the range of tools used in metals technologies and their use. Location of equipment	Completion of Safety Worksheet Review. Observation of student working on each production technique.	

• The function, selection and correct use of a range of contemporary tools used for – cutting – measuring and marking out – bending and joining. • Machine tools for finishing, drilling and folding.	machine tools for a design project.	and tools. Use textbooks to determine the use of equipment and tools in metals production. • Testing of design solution and development of skills. • Categorise tools: cutting, measuring and marking out, bending and joining. • Review safe use of metals technology tools and complete safety worksheet.	Completion of design task.	
Focus Outcome 4.3.1 **Metals Technologies Techniques** • construction techniques including cutting, shaping, joining and finishing metals. Contributing Outcome 4.5.2 • skill development and refinement • construction steps that contribute to a quality solution • relationship of quality solutions to needs and opportunities and the criteria for success for each design project. •	• cut, shape and finish metals • select and use appropriate techniques for the purpose of a design project. • identify suitable materials, tools and techniques for each design project. • practice and refine skills needed for design projects. • apply a design process that responds to needs and opportunities for each design project. • produce solutions reflecting quality standards appropriate to each design project.	• Teacher demonstration of each technique. • Students to experiment with and test various techniques to achieve quality, then demonstrate selection and use of appropriate techniques through the production of their herb stand. Consider criteria to evaluate success when making design decisions.		
		Weeks 17–19		
Focus Outcome 4.6.1 • developing criteria for success as a tool for assessing design development and production. • ongoing evaluation of design ideas and decisions. • Final evaluation considering – Design process used – Design solutions – Reflection on learning Focus Outcome 4.1.1	• apply criteria for success in decision making during the development of each design project. • use criteria for success to reflect on the design process used and the solutions. • evaluate prior to, during and at completion of each design solution. • self assess and peer assess design solutions.	• Develop an evaluation checklist, based upon criteria established in Week 3. • Self evaluation of final design using checklist as well as evaluation by peers.	Ongoing folio documentation – computer generated.	

• Design processes including – evaluating ideas and solutions	• evaluate design processes			
Contributing Outcome 4.6.2 • ethical and responsible design	• demonstrate appropriate ethics and etiquette in relation to computer use such as general computer care, passwords, file security, network use, printing and shared resources.	• In production work groups, compile and word process production steps for both the container and stand. Download digital photographs into each step.	Students to complete the production method – literacy strategy, 'procedures'. Ongoing folio documentation – computer generated.	
Week 20				
Focus Outcome 4.1.1 • Design processes including – risk management.	• consider short-term and long-term consequences of design in the design process.	• Students undertake a life cycle analysis of the finished product. Discuss short and long term impact upon the environment of the design that was produced. • Harvesting and planting of herbs in container.	Design folio documentation and evaluation of environmental impact of product. Finished product.	