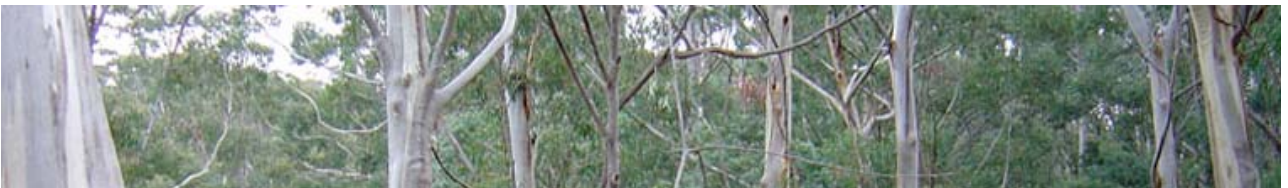

Technology (mandatory)

Years 7–8 Syllabus

Stage 4

Plan it: a native garden/walk



Stage 4 – Technology (mandatory)

Plan it: a native garden/walk

<p>Length of unit: 20 weeks (50 hours) Area of study: Built Environments Design specialisation: Landscape Design Technology: Model Making Technologies</p>	<p>Focus outcomes</p> <p>4.1.1 applies design processes that respond to need and opportunities in each design project</p> <p>4.1.2 describes factors influencing design in the areas of built environments, products and information and communications</p> <p>4.1.3 identifies the roles of designs and their contribution to the improvement of the quality of life</p> <p>4.2.2 selects analyses, presents and research and experimentation from a variety of sources</p> <p>4.3.1 applies a broad range of contemporary and appropriate tools, materials and techniques with competence in the development of design projects</p> <p>4.5.1 applies management processes to successfully complete design projects.</p> <p>Contributing outcomes</p> <p>4.2.1 generates and communicates creative design ideas and solutions</p> <p>4.3.2 demonstrate responsible and safe use of a range of tools, materials and techniques in each design project</p> <p>4.4.1 explains the impacts of innovation and emerging technologies on society and the environment</p> <p>4.5.2 produces quality solutions that respond to identify needs and opportunities in each design project</p> <p>4.6.1 applies appropriate evaluation techniques throughout each design project</p> <p>4.6.2 identifies and explains ethical, social, environmental and sustainability considerations related to design projects.</p>
<p>Unit description</p> <p>In this unit of work students explore the local environment to develop knowledge of native flora, fauna, food and medicine in the local area. They work through a design process to design, produce and evaluate a model native garden/walk suitable for the local area. Students research the qualities and uses of local native plants, using a variety of sources including members of the local Aboriginal community, the local council and the internet. Students generate and communicate their design ideas to plan and draw a landscape environment using a range of techniques. They experiment with model-making materials, tools and techniques. They record the design process in their folio to monitor and record progress throughout the design project.</p> <p>Design project: Research, design and produce a model and signage for a native garden/walk within the school or the local community.</p> <p>Aboriginal perspectives</p> <ul style="list-style-type: none">• Aboriginal people who live in the local area now• Aboriginal people who have lived in the local area in the past• knowledge of flora and fauna found in the local environment• Indigenous cultural knowledge and intellectual property• Dhurga language names for flora and fauna• role of Indigenous designers in the design of the Built Environment.	

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Plan it: a native garden/walk

Resources

Web resources:

- Indigenous Built Environment designer Alison Page
www.powerhousemuseum.com/designersatwork/intro.php?ID=9
- Australian National Botanic Gardens:
 - Aboriginal Plant Use in South-Eastern Australia
www.anbg.gov.au/aborig.s.e.aust/index.html
 - Australian Flora Resources www.anbg.gov.au/flora/index.html
- Backyard Blitz www.burkesbackyard.com.au → search fact sheets
- Dry Spell Gardening
www.lifestylechannel.com.au/dryspellgardening/factsheets.asp
- ABC Radio National *Earthbeat* program
www.abc.net.au/rn/science/earth/stories/s801240.htm
- *Walk in the Cadi Jam Ora First Encounters Garden*. Case study of the Cadigal people, the traditional Aboriginal owners of the Sydney city area, and features plants that originally grew there.
- Royal Botanic Gardens Sydney *Cadi Jam Ora First Encounters Garden* webpages
www.rbgsyd.nsw.gov.au/welcome_to_bgt/royal_botanic_gardens/garden_features/indigenous

Community resources:

- Local Aboriginal community members
- Aboriginal Education Assistant
- Booderie National Park and Botanic Gardens
- Indigenous Rangers

Other resources:

- Model making books, tools and equipment for Model making
- Science equipment for soil tests
- Electronic resources (eg solar energy kits)
- Video excerpts of gardening shows such as *Backyard Blitz*, *The Black Olive Outback Café*, *Dry Spell Gardening*

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Plan it: a native garden/walk

Plan it: a native garden/walk

20 weeks (50 hours)

Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
4.1.1	<ul style="list-style-type: none"> • design processes including <ul style="list-style-type: none"> – analysing needs, problems and opportunities – establishing criteria for success – researching – generating creative ideas – communicating ideas – experimenting and testing ideas – risk management – managing resources – producing design solutions – evaluating ideas and solutions • <i>establish a design process that responds to an identified problem, need and opportunity</i> • needs and opportunities in the areas of study – built environment • <i>identify needs and opportunities that require solutions in the areas of study</i> 	<p>Analysing problems, needs and opportunities</p> <p>Teacher:</p> <ul style="list-style-type: none"> • draws on students prior knowledge in order to: <ul style="list-style-type: none"> – determine definitions of design and technology – explain the use of a design process for developing design projects • introduces the specialist language of the Built Environment area of study • outlines the design situation and brief. <p><i>Design situation:</i></p> <p><i>Regenerate interest in and knowledge of the local environment by designing a garden/walk with plants native to the local area. The garden/walk should acknowledge local Aboriginal people and provide information about their knowledge and uses of the native vegetation.</i></p> <p><i>Design brief:</i></p> <p><i>Design and produce a model of a garden/walk for the local school environment. The design should:</i></p> <ul style="list-style-type: none"> – incorporate the knowledge and experience of Aboriginal people – use native flora suited the local area – include appropriate signage. <p>Class:</p> <ul style="list-style-type: none"> • identifies design problem, need or opportunity • analyses the design situation and brief • unpacks the specialist language of the Built Environment area of study • discusses local landscape/area and draws on prior knowledge to identify suitable location for garden/walk in the school or local community. 	<p>Teacher gives oral feedback during class discussions.</p> <p>Student development of glossary for meta language.</p>

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Plan it: a native garden/walk

Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
		<p>Students:</p> <ul style="list-style-type: none"> analyses and rewrites the design situation and brief in their own words. develop word banks and subject glossary. 	<p>Student ability to locate and identify appropriate locations for garden/walk.</p>
<p>4.1.2</p> <p>4.2.1</p>	<ul style="list-style-type: none"> definitions of design recall a definition of design use of design folio to record and reflect on design ideas and decisions use ICTs to plan, develop and document design projects use a design folio to record and reflect on design ideas and decisions 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 	<p>Teacher:</p> <ul style="list-style-type: none"> reviews class definition of design discuss production plans as ways to plan design activities and focus on the design process considering available resources demonstrates ways to plan design activities and focus on the design process. <p>Students:</p> <ul style="list-style-type: none"> identify key words in the design process represent the design process in the form of a flow chart develop a design folio in electronic format to communicate the research and the creative ideas generated use features such as tabs, indents, headers and footers, margins and line and paragraph spacing and apply appropriate layout and graphic design when composing the design folio document aspects of the design process in a design folio. 	<p>Flow charts exhibit clear understanding of key elements of the design process.</p> <p>Presentation of information gathered demonstrates student use of folio to record and reflect design development.</p> <p>Teacher gives written feedback on design folio development.</p>
<p>4.1.2</p>	<ul style="list-style-type: none"> factors affecting design <ul style="list-style-type: none"> function aesthetics human form scale ergonomics ethical environmental legislation including OHS 	<p>Researching, generating and communicating design ideas</p> <p>Students:</p> <p>Read and discuss transcript of ABC Radio National <i>Earthbeat</i> program <i>Walk in the Cadi Jam Ora First Encounters Garden</i> – case study of plants that originally grew in the traditional lands of the Cadigal people, on the site of the Royal Botanic Gardens in Sydney: www.abc.net.au/rn/scince/earth/stories/s801240.html</p>	

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Plan it: a native garden/walk

Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
	<ul style="list-style-type: none"> – cost – socio-cultural – resource availability – physical and material properties – safety <ul style="list-style-type: none"> • <i>examine factors affecting design in the areas of study of Built Environments, Products, and Information and Communications</i> • <i>describe the factors affecting design in the development of each design project</i> • <i>evaluate the appropriateness of specific design solutions for different cultural groups including Aboriginal and Torres Strait Islanders and other Indigenous peoples</i> 	<p>Write responses to the following:</p> <ol style="list-style-type: none"> 1. Identify the native plants used in the Cadi Jam Ora garden. 2. Describe Cadigal people’s knowledge and use of these plants. 3. Identify the factors that the creators of the Cadi Jam Ora garden considered in their design of the garden. 4. Do you believe that this garden is an appropriate representation of Cadigal life? Justify your response. 	<p>Evaluation of the appropriateness of the Cadi Jam Ora garden design demonstrates student understanding of the factors affecting design and appropriateness of design.</p> <p>Teacher assesses students’ evaluations and provides oral feedback.</p>
4.2.2	<ul style="list-style-type: none"> • research methods <ul style="list-style-type: none"> – needs analysis – surveys and interviews – searching techniques including use of the internet • <i>use effective research methods to identify needs and opportunities and locate information relevant to the development of each design project</i> 	<p>Teacher:</p> <ul style="list-style-type: none"> • arranges a visit by an Indigenous Ranger from national park or botanic garden to talk about a broad range of facts and information about local plants, eg qualities and description, growth patterns, suitable weather/climate and soil conditions, traditional knowledge about nutritional and medicinal uses of plants, relationship of plants to local fauna. <p>Class:</p> <ul style="list-style-type: none"> • brainstorms and outlines suggested headings and the type of information which could be included in fact sheets about local plants • investigates Dhurga language names for local plants, or recalls this prior knowledge from their 100-hour Stage 4 Dhurga language course. 	<p>Participate in excursion/presentation by guest speaker and use it as an opportunity to collect information for their research.</p> <p>Students identify relevant information and headings.</p>

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Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
		<p>Assessment activity 1</p> <p><i>Students:</i></p> <ul style="list-style-type: none"> • conduct research using a variety of sources to collect information about native plants of the local area, including information about Aboriginal knowledge and use of those plants • develop fact sheets summarising their research. 	<p>Teacher gives written feedback on fact sheets.</p>
4.6.2	<ul style="list-style-type: none"> • ethical and responsible design • <i>identify ethical, social, and environmental and sustainability considerations relevant to each design project</i> • <i>be responsible and ethical in the decisions made in the development and production of each design project</i> • <i>explain the responsibilities of designers</i> 	<p><i>Teacher:</i></p> <ul style="list-style-type: none"> • explains the importance of making ethical decisions in the development and production of the garden/walk • outlines ethical and social design considerations in relation to Indigenous knowledge by explaining, eg: <ul style="list-style-type: none"> – intellectual property issues in relation to knowledge of Country – importance of consulting with and acknowledging Aboriginal community knowledge sources – researchers’ responsibility to acknowledge information sources. <p><i>Class:</i></p> <ul style="list-style-type: none"> • summarise understanding of key issues related to intellectual property rights. <p><i>Students:</i></p> <ul style="list-style-type: none"> • write an individual response assessing the ethical, social, sustainability and environmental aspects of design: <ul style="list-style-type: none"> – outline the responsibilities of the designers in relation to social, sustainability and environmental aspects – explain how their own garden/walk design project will account for the ethical, social, sustainability and environmental considerations discussed. 	<p>Class summary indicates understanding of responsible design decisions.</p> <p>Student responses demonstrate key understandings of their role and responsibilities as designers to account for ethical, social, and environmental and sustainability issues specific to their garden/walk project. Teacher provides written feedback.</p>

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Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
4.1.3	<ul style="list-style-type: none"> • work and training opportunities for people who engage in design and technology in each area of study • <i>explore work and training opportunities for people who engage in design and technology relevant to each area of study</i> 	<p><i>Teacher:</i></p> <ul style="list-style-type: none"> • arranges a guest speaker, who is qualified and working as a landscape designer or horticulturalist, and/or • leads class discussion on topics related to training and employment of landscape designers and horticulturalists, eg: <ul style="list-style-type: none"> – courses and training opportunities available – employers who provide work for landscape designers and horticulturalists; and self-employment opportunities – typical tasks and daily work duties of landscape designers and horticulturalists – watering systems, who is qualified to install them and what technologies have been developed, eg plastics poly-pipe – the use of mulching and recycling grey water – traditional conservation of plants when harvesting. <p><i>Class:</i></p> <ul style="list-style-type: none"> • responds to the guest speaker presentation and participates in the teacher-led discussion. 	<p>Through the presentation and/or discussion, students demonstrate understanding of the role and work of landscape designers and horticulturalists. Teacher observes student participation in discussion.</p>
4.2.2 4.6.1	<ul style="list-style-type: none"> • research methods <ul style="list-style-type: none"> – needs analysis – surveys and interviews – searching techniques including use of the internet • <i>use effective research methods to identify needs and opportunities and locate information relevant to the development of each design project</i> • develop criteria for success as a tool for assessing design development and production 	<p><i>Teacher:</i></p> <ul style="list-style-type: none"> • leads discussion to recall a definition of ‘criteria for success’ • provides relevant excerpts from sources such as <i>Backyard Blitz</i>, <i>The Black Olive Outback Café</i>, <i>Dry Spell Gardening</i>. <p><i>Class:</i></p> <ul style="list-style-type: none"> • views the various excerpts to research needs and opportunities, and locate information relevant to the development of their design project • discusses presentation of garden renovations and plant layout • identifies a criteria for success for each garden design demonstrated in the various excerpts/sources. 	<p>Student note-taking and oral responses in class discussion demonstrate understanding of the influence of factors affecting garden design and plant layout.</p>

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Plan it: a native garden/walk

Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback						
	<ul style="list-style-type: none"> • <i>apply criteria for success in decision making during the development of each design project</i> 	<p>Students:</p> <ul style="list-style-type: none"> • Develop a checklist for a well-designed garden/walk. 	<p>Student checklists indicate criteria for success which are relevant to their design project.</p>						
<p>4.1.2</p> <p>4.6.1</p> <p>4.2.1</p>	<ul style="list-style-type: none"> • factors affecting design <ul style="list-style-type: none"> – function – aesthetics – scale – safety – ethical – environmental – OHS – cost – socio-cultural • <i>examine factors affecting design in the areas of study of Built Environments, Products, and Information and Communications</i> • develop criteria for success as a tool for assessing design development and production • <i>apply criteria for success in decision making during the development of each design project</i> • communication methods including <ul style="list-style-type: none"> – drawings, sketches and models – written reports – oral presentations – digital presentations • <i>sketch, draw and model to aid design development</i> 	<p>Teacher:</p> <ul style="list-style-type: none"> • Reviews and defines the list of the factors affecting design, ie function, aesthetics, scale, safety, ethical, environmental, OHS, cost, socio-cultural <p>Class:</p> <ul style="list-style-type: none"> • Constructs a summary table which identifies how each of the factors affecting design applies to their model native garden/walk. <table border="1"> <thead> <tr> <th>Factor</th> <th>Definition</th> <th>How this applies to garden/walk project</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Students:</p> <ul style="list-style-type: none"> • refer to research activities and class discussion of factors affecting design. • negotiate, develop and record the criteria for success that meet the needs and constraints of the design. • develop a set of criteria to meet the design brief for their own project: “A well-designed native walk/garden should ...” • design and roughly sketch an initial plan of a suitable garden/walk design. • evaluate the features of the plan against the established criteria for success. 	Factor	Definition	How this applies to garden/walk project				<p>Class table summarises the relevance and application of the factors affecting design to the garden/walk project.</p> <p>Students develop appropriate criteria, informed by their research and relevant to their project.</p> <p>Student designs are informed by their criteria for success.</p> <p>Student evaluation of their design is reasonable and demonstrates understanding of application of the criteria for success.</p>
Factor	Definition	How this applies to garden/walk project							

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Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
4.2.1	<ul style="list-style-type: none"> • communication methods including <ul style="list-style-type: none"> – drawings, sketches and models – written reports – oral presentations – digital presentation • communication methods suitable for specific audiences including <ul style="list-style-type: none"> – users and clients – technical experts – peers • <i>sketch, draw and model to aid design development</i> • <i>manipulate images with tools such as editing, resizing, grouping, aligning and positioning</i> • <i>communicate information appropriate to specified audiences</i> 	<p>Teacher:</p> <ul style="list-style-type: none"> • prepares for students a worksheet on drawing and CAD skills and applications • provides various models of landscape design plans which: <ul style="list-style-type: none"> – compare techniques eg freehand sketching, technical drawing, CAD – illustrate plan view, front view, end view – demonstrate how to produce plans to accurate scale. <p>Class:</p> <ul style="list-style-type: none"> • completes drawing and CAD skills and applications worksheet • research and compare landscape design plans and documentation techniques used for showing a range of features, eg planting, grassed areas, walkways <p>Assessment activity 2</p> <p>Students:</p> <ul style="list-style-type: none"> • produce a design plan, completed to scale, of the garden/walk, using CAD showing layout, planting, location of features. • produce quality solution which clearly communicates design ideas. 	<p>Student plans communicate their understanding of drawing and CAD conventions and methods. Teacher provides written feedback on student plans for the garden/walk layout.</p>
4.4.1	<ul style="list-style-type: none"> • innovation and emerging technologies relating to tools, materials, techniques or products in each area of study • <i>identify and describe a selected innovation or emerging technology in each area of study of Built Environments, Products, and Information and Communications</i> 	<p>Teacher:</p> <ul style="list-style-type: none"> • leads class discussion on the importance of signage for the garden/walk design project • outlines a range of innovative and emerging technologies that could be used for signage for the project, eg solar technology, LED belt buckles • provides examples/models of the use of these technologies for the purposes of signage. <p>Class:</p> <ul style="list-style-type: none"> • identifies which features of the garden/walk require signage, and what information the signage needs to contain 	

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Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
4.5.2	<ul style="list-style-type: none"> • relationship of quality solutions to needs and opportunities and the criteria for success for each design project • <i>produce solutions reflecting quality standards appropriate to each design project</i> 	<ul style="list-style-type: none"> • develops text/labels to explain plants, using fact sheets developed in Assessment Activity 1, and acknowledging the contribution and knowledge of Aboriginal people consulted during the project • carries out further research on signage using the technologies outlined by the teacher • finds additional examples/models of innovative and emerging technologies used for the purposes of signage • develops agreed criteria for success for innovative signage for the garden/walk. <p><i>Students:</i></p> <ul style="list-style-type: none"> • design and produce signage for the garden/walk design project using the technology and criteria which the class agreed on. 	<p>Students demonstrate their understanding of emerging technologies by producing signs appropriate for their model garden/walk.</p>
4.3.1	<p>Materials</p> <ul style="list-style-type: none"> • characteristics and properties of model-making materials such as <ul style="list-style-type: none"> – adhesives and joining materials – balsa – card – figures and other incorporated objects – foamboard – modelling clay – paper – polymers – textiles – timber • <i>experiment with combinations and types of materials</i> 	<p>Experimenting and testing ideas</p> <p><i>Teacher:</i></p> <ul style="list-style-type: none"> • establishes the need to make a model of a design project, and leads the class in a discussion about the purpose of making a model of a design project • provides students with a range of suitable model making materials, including balsa, card, foamboard, paper, polymers, timber, figures and other incorporated objects • describes the characteristics and properties of the materials. <p><i>Class:</i></p> <ul style="list-style-type: none"> • brainstorms need and purpose of making a model of the garden/walk design project 	<p>Results of experimentation show student understanding of materials.</p>

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Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
	<ul style="list-style-type: none"> • <i>select and use appropriate materials for the purposes of a design project</i> 	<p>Students:</p> <ul style="list-style-type: none"> • select suitable materials from the available range • experiment with selected materials. 	<p>Teacher observation and oral feedback as students complete experimentation.</p>
4.3.1	<p>Tools</p> <ul style="list-style-type: none"> • specific tools related to model-making technologies • the function and correct use of a range of contemporary tools used for <ul style="list-style-type: none"> – measuring – marking out – cutting – construction – finishing • <i>select and correctly use tools and equipment to produce a design project</i> 	<p>Teacher:</p> <ul style="list-style-type: none"> • demonstrates the safe use and selection of tools for marking out and measuring, cutting, including the scroll saw and drill press, joining, finishing, including disc sanding machines for model making. <p>Students:</p> <ul style="list-style-type: none"> • experiment with a range of tools for the construction of the model • complete a Y-chart to demonstrate their knowledge of cutting, shaping and joining methods suitable for their model realisation • construct a flow chart demonstrating how they are going to implement the results and conclusion of experimentation into their model realisation • identify the tools and techniques required for producing the garden model and justify the choices • select and safely use appropriate tools and equipment when producing the model. 	<p>Results of experimentation shows student understanding of tools and equipment used in model-making.</p> <p>Teacher observation and oral feedback as students complete experimentation.</p>
4.3.1	<p>Techniques</p> <ul style="list-style-type: none"> • techniques such as <ul style="list-style-type: none"> – systematic planning for model development – working to pre-established scale – cutting accurately – shaping and sanding – joining a range of different materials 	<p>Teacher:</p> <ul style="list-style-type: none"> • demonstrates techniques for construction of the model • demonstrates cutting, shaping and finishing of modelling materials to produce quality results. <p>Students:</p> <ul style="list-style-type: none"> • identify and use the cutting, shaping and finishing techniques 	

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Plan it: a native garden/walk

Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
	<ul style="list-style-type: none"> – clamping and pinning – finishing including painting, lacquering, polishing • <i>experiment with a variety of techniques for cutting, shaping, joining, clamping and finishing</i> • <i>select and use a variety of techniques appropriate for the purposes of a design project</i> 	<ul style="list-style-type: none"> • practice skills of cutting, shaping and finishing materials • use technical terms related to the techniques, equipment and tools • implement the production process to produce quality model of garden/walk • use safe work practices. <p><i>Class:</i></p> <ul style="list-style-type: none"> • summarises and reviews experiences by constructing a set of instructions that could be used by another person/class. 	<p>Students develop an awareness of appropriate tools and equipment as they use available resources to produce a quality solution in a safe way. Teacher observes students working and provides oral feedback.</p>
4.3.2	<ul style="list-style-type: none"> • 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 • <i>manage risk when developing design projects</i> • <i>use tools, materials and techniques in a responsible and safe manner in each design project</i> 	<p><i>Teacher:</i></p> <ul style="list-style-type: none"> • explains safety factors to consider when using materials, tools and techniques appropriate to modelling technologies. <p><i>Students:</i></p> <ul style="list-style-type: none"> • identify the consequences of a range OH&S practices • complete written and practical OH&S testing • manage risk when working with materials, tools and techniques appropriate to modelling technologies. 	<p>Accurate completion of tests.</p> <p>Students demonstrate safe practices with teacher supervision and oral feedback.</p>
4.3.2	<ul style="list-style-type: none"> • maintenance of tools and equipment • <i>maintain tools and equipment including computer equipment</i> 	<p><i>Teacher:</i></p> <ul style="list-style-type: none"> • demonstrates and explains the maintenance, appropriate use and storage of tools and equipment appropriate to model-making. <p><i>Students:</i></p> <ul style="list-style-type: none"> • maintain tools and equipment during the production of the model. 	<p>Students demonstrate safe practices when maintaining tools and equipment.</p>

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Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
4.5.1	<ul style="list-style-type: none"> • resource availability including: <ul style="list-style-type: none"> – time – money – materials, tools and techniques – human resources including skills and expertise – other resources • <i>identify resource availability and apply realistic limitations to each design project</i> • management techniques including action, time and budget planning • <i>develop and apply action, time and budget plans in design projects</i> 	<p>Producing, managing and evaluating solutions</p> <p><i>Teacher:</i></p> <ul style="list-style-type: none"> • leads discussion on how to manage a design project • provides students with models of how to record and track production schedules for design projects. <p><i>Class:</i></p> <ul style="list-style-type: none"> • brainstorm range of factors relevant to management of their garden/walk project, including available timeframe, budget, materials, tools, techniques, skills • consider example production schedules provided by the teacher. <p><i>Students:</i></p> <ul style="list-style-type: none"> • develop a production schedule for the completion of their model garden/walk. The production schedule will outline, for example: <ul style="list-style-type: none"> – resources available to complete the project, eg timeline – a list of tools, materials, techniques needed – OH&S requirements – an action plan which identifies tasks and project milestones 	<p>Students’ production schedules/ action plans demonstrates effective project management skills and realistic consideration of resources, and appropriate use of tools and techniques.</p>
4.5.2	<ul style="list-style-type: none"> • suitable materials, tools and techniques for each design project • <i>produce solutions reflecting quality standards appropriate to each project</i> 	<p>Assessment activity 3</p> <p><i>Students:</i></p> <ul style="list-style-type: none"> • follow their production schedule/action plan to produce a model native garden/walk and signage. 	<p>The final model demonstrates student understanding of the use of materials, tools and techniques to produce a quality solution working through a process of design.</p>

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Plan it: a native garden/walk

Outcomes	Students learn about: <i>Students learn to:</i>	Integrated learning experiences, instruction and assessment	Evidence of learning/ Feedback
	<ul style="list-style-type: none"> • <i>produce solutions reflecting quality standards appropriate to each design project</i> 		Teacher observes student project work and gives written feedback.
4.6.1	<ul style="list-style-type: none"> • ongoing evaluation of design ideas and decisions • <i>use criteria for success to reflect on the design process used and the solutions</i> • final evaluation considering <ul style="list-style-type: none"> – design process used – design solutions – reflection on learning • <i>evaluate prior to, during and at completion of each design solution</i> • <i>self-assess and peer-assess design solutions</i> 	<p>Teacher:</p> <ul style="list-style-type: none"> • leads class discussion to evaluate the completed model garden/walk projects and signage in terms of the criteria for success criteria decided at the beginning of the unit of work. <p>Class:</p> <ul style="list-style-type: none"> • creates a class display of garden model and design folios • invites to the school the Indigenous Rangers and Aboriginal Community members who were consulted during the project • morning tea and celebration of completed project. 	<p>The final model and signage demonstrates student understanding of the use of materials, tools and techniques to produce a quality solution working through a process of design. The model demonstrates consultation with local Aboriginal people on their knowledge and use of plants to be used in the garden/walk.</p> <p>Student evaluation shows their understanding of the criteria for success.</p>

Stage 4 – Technology (mandatory)

Plan it: a native garden/walk

Assessment activity 1

Description of activity

Students conduct research using a variety of sources, to collect information about native plants of the local area, including information about Aboriginal knowledge and use of those plants. They develop a fact sheets on flora of the local area.

Context

This is an assessment activity in a unit of work in which students design, produce and evaluate a model native garden/walk, which includes local Aboriginal knowledge and uses of plants. The students have reviewed the design process and been introduced to the design project. They have discussed and identified suitable local locations for a native garden/walk. They have begun to establish criteria for success for the design project. They have considered some of the factors affecting the design of the garden.

Areas for assessment

- Analysing problems, needs and opportunities
- Researching

Outcomes

A student:

4.2.2 selects analyses, presents and research and experimentation from a variety of sources

4.5.2 produces quality solutions that respond to identify needs and opportunities in each design project.

Criteria for assessing learning

Students will be assessed on their ability to:

- conduct research using a variety of sources, to collect information about native plants of the local area, including information about Aboriginal knowledge and use of those plants.
- produce fact sheets on flora of the local area.

Stage 4 – Technology (mandatory)

Plan it: a native garden/walk

Assessment activity 2

Description of activity

Students use CAD to produce plans to scale of the garden/walk design. Their plans show layout, planting and location of features.

Context

This is an assessment activity in a unit of work in which students design, produce and evaluate a model native garden/walk, which includes local Aboriginal knowledge and uses of plants. Students have developed a checklist for a well designed garden/walk and considered a range of factors affecting design. After investigating and comparing various relevant drawing, rendering and documenting techniques, students are required to produce a design layout for the garden/walk.

Areas for assessment

Researching, generating and communicating ideas

Outcomes

A student:

- 4.2.1 generates and communicates creative design ideas and solutions
- 4.2.2 selects analyses, presents and research and experimentation from a variety of sources.
- 4.5.2 produces quality solutions that respond to identify needs and opportunities in each design project.

Criteria for assessing learning

Students will be assessed on their ability to:

- produce a design plan to scale of the garden/walk, using CAD showing layout, planting, location of features
- produce a quality solution which clearly communicates design ideas.

Stage 4 – Technology (mandatory)

Plan it: a native garden/walk

Assessment activity 3

Description of activity

Students design, produce and evaluate a model of a native garden/walk that includes a local Aboriginal perspective and signage for the plants. They record the design process in their folios.

Context

This is an assessment activity in a unit of work in which students design, produce and evaluate a model native garden/walk, which includes local Aboriginal knowledge and uses of plants. The students have reviewed the design process and been introduced to the design project. They have discussed and identified suitable local locations for a native garden/walk, established criteria for success for the design project and considered a broad range of factors affecting the design of the garden/walk. They have investigated and compared various relevant drawing, rendering and documenting techniques and produced a design layout for the garden/walk. They have researched emerging and innovative technologies for signage for the garden/walk. They have experimented with a range of model-making materials, tools and techniques. They have developed a production schedule to guide the completion of their project. In this final assessment activity students use all of the knowledge and skills gained from experimentation with design ideas, materials, tools and techniques for the development of their own design project.

Areas for assessment

- Analysing problems, needs and opportunities
- Researching, generating and communicating ideas
- Experimenting and testing ideas
- Producing, managing and evaluating solutions

Outcomes

A student:

- 4.1.1 applies design processes that respond to needs and opportunities in each design project
- 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
- 4.3.1 applies a broad range of contemporary and appropriate tools, materials and techniques with competence in the development of design projects
- 4.5.2 produces quality solutions that respond to identified needs and opportunities in each design project
- 4.6.1 applies appropriate evaluation techniques throughout each design project

Criteria for assessing learning

Students will be assessed on their ability to:

- select and use appropriate materials, tools and techniques to make a quality model
- use emerging and innovative technologies for the signage
- incorporate relevant Aboriginal knowledge into the design project
- demonstrate safe and responsible work practices throughout the production of the project
- communicate design ideas and techniques in the design folio
- evaluate the project according to the criteria for success.

Stage 4 – Technology (mandatory)

Plan it: a native garden/walk

Dimensions of the Quality Teaching Framework

Intellectual Quality

This unit fosters deep understanding of design theory and processes as students design, produce and evaluate a native garden/walk within the school or local community area. They develop knowledge of ethical, social and environmental considerations as they gather research from local Indigenous Rangers, Elders and expert community members. The capacity to solve problems and generate ideas through the use of models and drawings are important to developing technological competence. Higher-order thinking skills are developed throughout the application of a design process as they analyse needs, problems and opportunities and evaluate design solutions. The use of reflective, flexible and creative thinking skills are encouraged to build understanding of underlying principles that can be transferred to different project settings and applications. The collaborative project builds substantive communication as the contribution of each student to the design of the garden, is considered by others.

Quality Learning Environment

The project work fosters collaborative relationships between teachers and students and among students. The development of the design brief ensures students are aware of the expectations of the unit. Students develop explicit criteria for success for the project that is used to evaluate the project during and at completion of the project and to reflect on its success. The teaching and learning strategies of the unit provides scaffolding using a design process for students who need more support and the use of open-ended experimentation activities.

Significance

The unit acknowledges background knowledge of students through assessing prior school knowledge. Brainstorming and class discussion activities generate ideas about the landscape of the local area and community gardens and acknowledge students' prior knowledge of the local area. The inclusion of an Aboriginal perspective in the unit strengthens students' understanding and valuing of the skills, knowledge and protocols of diverse social groups. The design project is significant for students as they determine the real-life contexts of designing a garden/walk in the school or local community. Students share their work and connect with community audiences outside the school.

Stage 4 – Technology (mandatory)

Plan it: a native garden/walk

Dimensions of the Quality Teaching Framework (cont)

Design process	Elements of the Quality Teaching Framework		
	Intellectual Quality	Quality Learning Environment	Significance
<p>Analysing needs, problems and opportunities Students are introduced to the design project and discuss the area in which students will design their model native garden/walk. They form groups and establish the criteria for success for the design project. They consider a range of factors affecting the design of the garden, including the suitability of the native plants for the location, climate, rate of growth, soil type, etc. as well as Aboriginal knowledge of local flora and fauna.</p>	<p>Deep knowledge Deep understanding Higher order thinking Metalanguage</p>	<p>Explicit quality criteria High expectations Engagement Student direction</p>	<p>Background knowledge Inclusivity Cultural knowledge connectedness</p>
<p>Researching, generating and communicating ideas Students will participate in a visit from an Indigenous Ranger from the nearest National Park or Botanic Garden and investigate the use of native plants for food and medicine and the Dhurga language names for native plants. They research native plants used by Aboriginal people from a variety of sources. Students develop fact sheets on flora of the local area. They investigate landscape design and documentation techniques, including sketching, technical drawing and CAD. They investigate innovative technologies that could be used to be used to develop signs for the garden/walk. Students research landscape plans and document techniques used for showing planting, grassed areas, walkways etc using rendering techniques. They produce plans of their garden design using CAD and show layout, planting, location of features and complete to scale.</p>	<p>Deep knowledge Deep understanding Substantive communication Higher order thinking</p>	<p>Explicit quality criteria Student direction Student self-regulation</p>	<p>Cultural knowledge connectedness Knowledge integration connectedness</p>
<p>Experimenting and testing ideas Having decided on the plants to include, students design a layout for the model garden/walk considering the relative size of plants, their soil, water, sun and shade requirements. They experiment and test a range of model-making tools, materials and techniques for the development of the design project. They manage risk and follow safe work practices.</p>	<p>Deep understanding Higher order thinking</p>	<p>Student self-regulation Social support</p>	<p>Knowledge integration</p>
<p>Producing, managing and evaluating solutions Students follow a production schedule and develop the final design solution – the model and garden/walk. Through their design folio they document aspects of the design development. Students produce signs that could be placed alongside plants in the garden.</p>	<p>Deep understanding Substantive communication Higher order thinking</p>	<p>Engagement Student self-regulation High expectations Social support</p>	<p>Cultural knowledge</p>