



Design and Technology Years 7–10

Advice on Programming and Assessment

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1 Introduction

This support document has been designed to help teachers understand key aspects of the new *Design and Technology Years 7–10 Syllabus* and to provide guidance for implementation. The document shows how these aspects can be incorporated in teaching and learning programs, and how these programs are underpinned by the principles of *assessment for learning* (*Design and Technology Years 7–10 Syllabus*, p 39).

The document provides advice about constructing a program that will cover the scope of Design and Technology for a stage. It sets out a process for planning and sequencing units of work, and developing teaching and learning activities.

The sample stage program plans and the sample units of work in this document demonstrate ways in which teachers can build a teaching and learning program and develop units of work to ensure coverage of the scope of the syllabus.

The document contains three Stage 5 sample units of work:

- *Safe and Sound*. Designed as an introductory unit in Stage 5 where students explore the need for storage devices to transport, secure and display a range of items. Students are required to design, produce and evaluate a storage solution for an identified item or items.
- *What's New*. Students explore innovation and enterprising activity, and identify a need or opportunity for the development of their own design project from a negotiated area of study.
- *On the Web*. In this unit students develop knowledge and understanding of, and skills in, using the World Wide Web. Students will develop and extend their skills through the manipulation of Information and Communication Technologies and design, produce and evaluate a website for a student-identified need or opportunity.

These sample units can be used as models for planning units of work. They include:

- relevant outcomes and content
- assessment activities that have been designed and integrated into the units of work
- different types of possible feedback
- a variety of teaching and learning experiences
- opportunities for student reflection.

An assessment activity from each unit has been selected to show how assessment can fit into teaching and learning sequences. They are described in some detail to illustrate the process of *assessment for learning*. Teachers would not provide this level of detail in day-to-day classroom situations. The units of work and activities may be modified or amended to suit the needs, interests and abilities of students.

For a small percentage of students with special education needs who are undertaking Life Skills outcomes and content, support materials will be provided which will assist in the development of a meaningful and relevant program of study related to the *Design and Technology Years 7–10 Syllabus*. Units of work adapted for students undertaking Design and Technology Life Skills will be included in a consolidated document that will be distributed to schools early in 2004.

2 Establishing a Scope and Sequence Plan

A fundamental step in the design of effective teaching and learning programs is the establishment of a scope and sequence plan. The scope and sequence information presented in this section provides an overview of units of work and details the placement, sequence and duration of the units. The major emphasis of the *Design and Technology Years 7–10 Syllabus* is on students being actively involved in the development and construction of quality design projects. When developing design projects teachers are required to integrate essential content through the focus area of study and should consider the range of projects that could be undertaken to satisfy syllabus requirements.

When establishing a scope and sequence the following syllabus requirements need to be met:

- all outcomes are to be addressed by the end of the course
- students undertaking the 100-hour course are required to complete a minimum of two and a maximum of four units of work addressing at least two focus areas of design (see *Design and Technology 7–10 Syllabus* p 14). Students undertaking the 200-hour course are required to complete a minimum of three and a maximum of six units of work that address at least three focus areas of design
- within each unit of work students will develop a designed solution and documentation for each design project. The documentation provides the student with a means of recording all aspects of the design project including the investigation and research undertaken, experimentation, development and justification of ideas, the process of realisation and design project evaluation. Students may use a folio, workbook, logbook, journal, electronic journal etc when documenting the designed solution.

When designing a scope and sequence plan teachers also need to consider:

- the specific needs, interests, abilities of students and areas of community significance
- the most effective utilisation of existing and available resources
- the previous learning experiences of students
- providing students with a range of experiences over the course that increase in challenge and sophistication
- the relevant guidelines and directives of their education authorities and/or schools.

Teaching programs should also recognise and reflect relevant State and Commonwealth legislation, regulations and standards including Occupational Health and Safety, Chemical Safety in Schools and Animal Welfare guidelines. Teachers need to be aware of activities that may require notification, certification, permission, permits and licences.

2.1 Sample Stage 5 Scope and Sequence Plan

The sample scope and sequence provided is based on a 200-hour program and presents one model that may be implemented by teachers.

The key features of the sample scope and sequence include:

- identification of the outcomes for each unit of work
- recognising that teachers may choose to place particular emphasis on specific outcomes in individual units of work or, alternatively, address aspects of all syllabus outcomes in each unit of work. Regardless of the approach taken by individual teachers it is essential that all outcomes are addressed by the completion of the course
- identification of the focus areas of design to meet the course requirements
- identification of relevant sections of essential content to be addressed in the context of the identified design project
- learning experiences that increase in challenge and sophistication over the 200-hour course.

Term	Year 9	Year 10
1	Unit 5.1 Unit title: Safe and Sound Outcomes: 5.1.1, 5.1.2, 5.3.2, 5.4.1, 5.5.1, 5.6.1, 5.6.3 Focus area of design: Packaging (This unit of work is described in detail in section 5.)	Unit 5.5 Unit Title: On the Web Outcomes: 5.1.2, 5.2.1, 5.3.1, 5.3.2, 5.5.1, 5.6.1 Focus area of design: Promotional
2	Unit 5.2 Unit title: The Shack Outcomes: 5.1.1, 5.1.2, 5.2.1 5.3.2, 5.4.1, 5.6.2 Focus area of design: Architectural	(This unit of work is described in detail in section 5.)
3	Unit 5.3 Unit title: What's New Outcomes: 5.1.2, 5.2.1, 5.3.1, 5.4.1, 5.5.1, 5.6.1, 5.6.3 Focus area of design: Student-negotiated (This unit of work is described in detail in section 5.)	Unit 5.6 Unit title: Design for the Future Outcomes: 5.1.1, 5.2.1, 5.3.1, 5.4.1, 5.5.1, 5.6.2, 5.6.3 Focus area of design: Industrial
4	Unit 5.4 Unit title: This goes with that Outcomes: 5.1.1, 5.3.2, 5.4.1, 5.5.1, 5.6.1, 5.6.2 Focus area of design: Accessory	

* The highlighted units are included in this document.

2.2 Stage 5 Unit Overviews

Unit 5.1 Safe and Sound

People have used storage devices to transport, secure and display a range of items. In our daily lives we regularly use different storage devices – school bag, lunch box, book shelf, wallet, glasses case, guitar case, refrigerator, pantry etc. In the past natural materials such as animal skins, reeds and timber were used to construct storage devices. Technological developments have led to the development of a broad range of materials such as polystyrene, aluminium, and tyvec. Students are required to design, produce and evaluate a storage device for an identified item or items. They may select the material or it can be designated by the teacher.

Unit 5.2 The Shack

Shelter is one of our basic needs. In the 1950s Australian families embraced a suburban dream. However this is no longer the case, since where we want to live and how we choose to live is changing. Students investigate the needs of individuals and families, and look at housing options for a variety of needs including emergency housing. They predict what our future cities may look like and consider the sustainability of city design and development. Student projects will focus on designing, producing and evaluating a student-selected housing solution resulting in plans, drawings and models of the solution.

Unit 5.3 What's New?

Throughout history innovations have provided the opportunity for us to do things better, safer, faster and more efficiently. Design must be appropriate to the market, the product and the client. Students investigate innovation and enterprising activity, and identify a need or opportunity for the development of their own design project from a negotiated focus area of design.

Unit 5.4 This goes with that

This unit of work encourages the pursuit of creativity and innovation. It introduces students to basic accessory design concepts, design development techniques, manipulation of materials, tools and techniques that lead to the production of quality accessories. Emphasis is placed on experimentation, creativity and high standards of practice as students translate original concepts into finished solutions.

Unit 5.5 On the Web

We are living in a global community where sharing information and working collaboratively are becoming increasingly important. The World Wide Web is the total set of interlinked webpages which use highlighted text, images and sometimes sounds, videos, games etc, and which are stored on web servers around the world. This unit focuses on developing knowledge and understanding of, and skills in, using the World Wide Web. Students will develop and extend their skills through the manipulation of ICT to design, produce and evaluate a website for a student-identified need or opportunity.

Unit 5.6 Design for the Future

In this unit of work students have the opportunity to design, produce and evaluate a design project for a student-identified need or opportunity in the Industrial Design focus area. Students will be encouraged to develop practical solutions to problems that improve everyday life. In this unit consideration is given to ergonomics, sustainability and design, design theory, computer-aided design and material manipulation. This unit provides for collaborative work and encourages self-directed learning.

3 Advice on Assessment

3.1 Assessment for Learning

The Board's revised syllabuses advocate *assessment for learning*. Assessment that enhances learning recognises that learners use their current understanding to discover, develop and incorporate new knowledge, understanding and skills. *Assessment for learning* helps teachers and students to know if that current understanding is a suitable basis for future learning.

Assessment occurs as an integral part of teaching and learning. Teacher instruction and assessment influence student learning and learning processes. This involves using assessment activities to clarify student understanding of concepts, and planning ways to remedy misconceptions and promote deeper understanding.

Assessment for learning encourages self-assessment and peer assessment. Students can develop and use a range of strategies to actively monitor and evaluate their own learning and the learning strategies they use.

The feedback that students receive from completing assessment activities will help teachers and students decide whether they are ready for the next phase of learning or whether they need further learning experiences to consolidate their knowledge, understanding and skills. Teachers should consider the effect that assessment and feedback have on student motivation and self-esteem, and the importance of the active involvement of students in their own learning.

By integrating learning and assessment, the teacher can choose which aspects of a student's performance to record. These records can be used to monitor the student's progress, determine what to teach next and decide the level of detail to be covered. At key points, such as the end of the year, this information is also available for the teacher to use to form a judgement of the student's performance against levels of achievement. This judgement can be used to inform parents, the next teacher and especially the student, of the student's progress. Consequently, teachers using their professional judgement in a standards-referenced framework are able to extend the process of *assessment for learning* into the assessment of learning.

Principles of assessment for learning

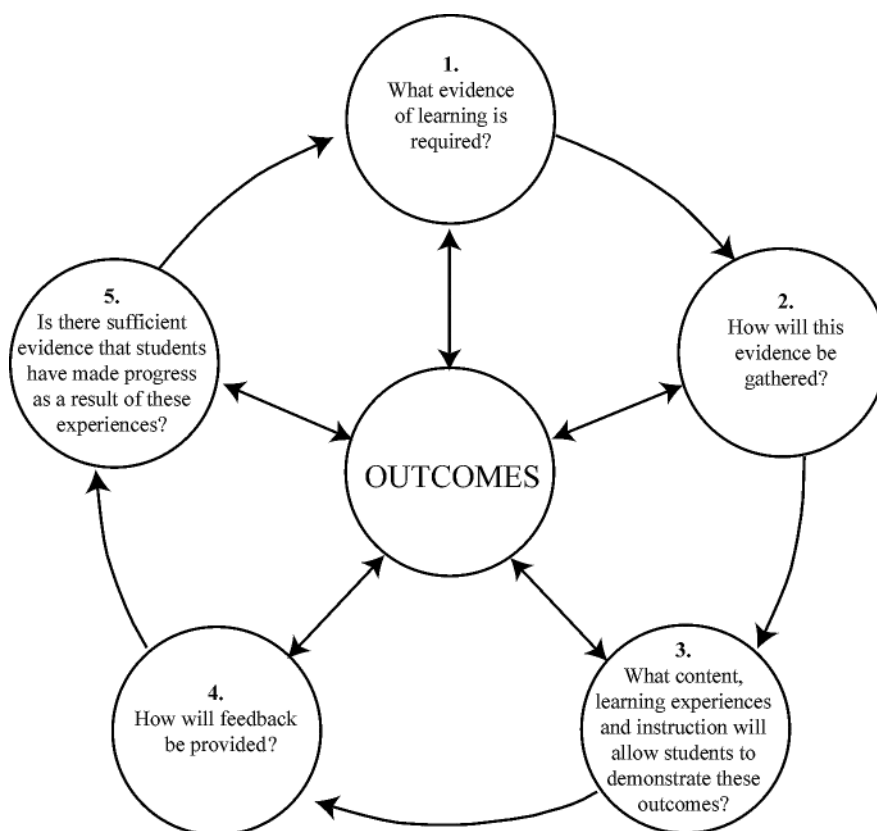
Assessment for learning:

- AP1 emphasises the interactions between learning and manageable assessment strategies that promote learning
- AP2 clearly expresses for the student and teacher the goals of the learning activity
- AP3 reflects a view of learning in which assessment helps students learn better, rather than just achieve a better mark
- AP4 provides ways for students to use feedback from assessment
- AP5 helps students take responsibility for their own learning
- AP6 is inclusive of all learners.

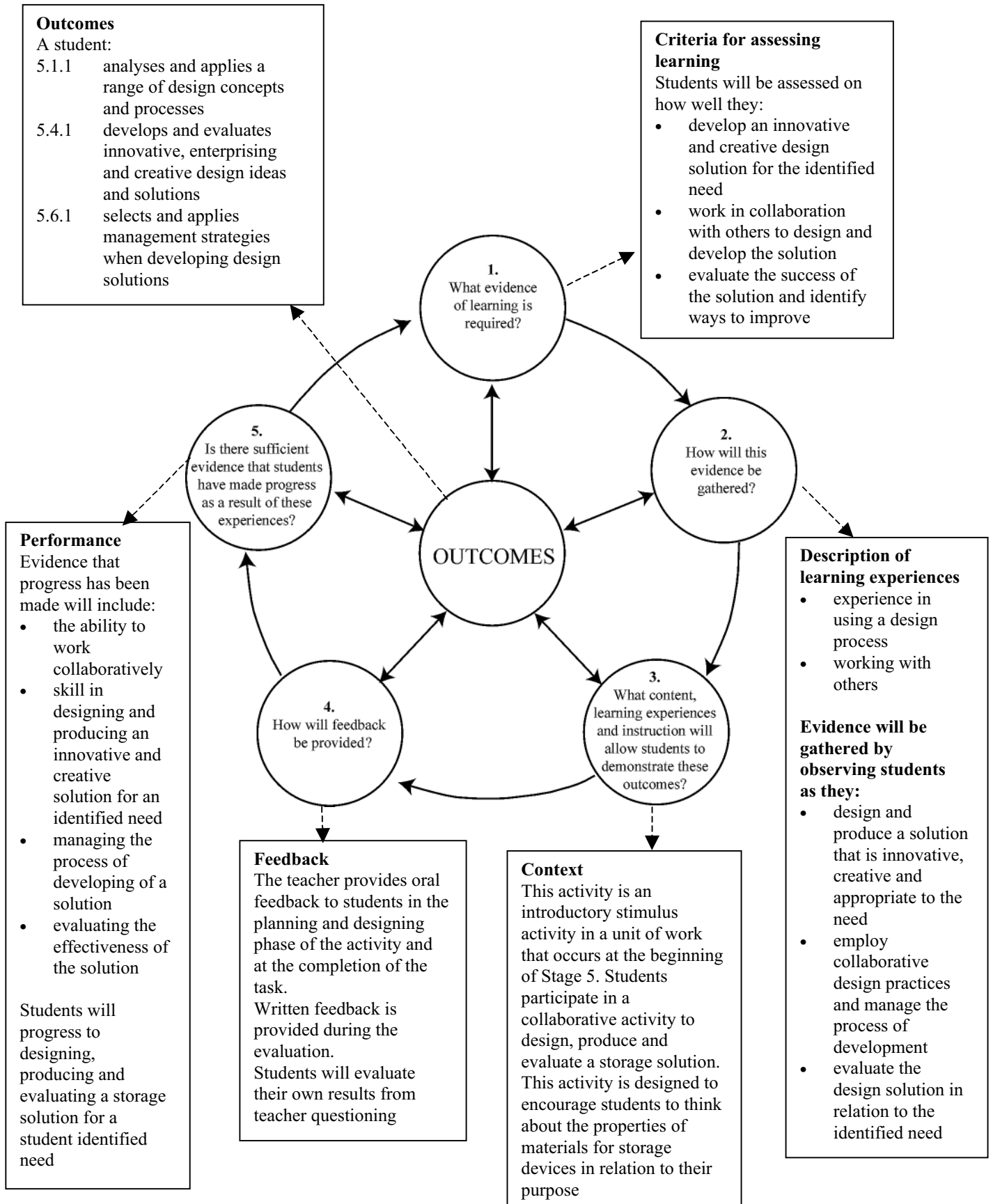
Details on how these principles translate in practice can be found on page 39 of the *Design and Technology Years 7–10 Syllabus*. One activity in this document has been annotated to show how the principles of *assessment for learning* feature in that activity. It can be found on page 13.

3.2 Planning for Effective Learning and Assessment

The diagram below summarises a model for integrating learning and assessment. It emphasises that outcomes are central to the decisions teachers make about the learning to be undertaken and the evidence of learning that needs to be collected. This evidence enables teachers to determine how well students are achieving in relation to the outcomes and to provide students with feedback on their learning. Evidence of learning assists teachers and students to decide if students are ready for the next phase of learning or if teachers need to adapt programs to provide further learning experiences to consolidate students' knowledge, understanding and skills.



The diagram on the following page shows how this process has been applied in the design of the sample assessment for learning activity Storage Solution.



3.3 Designing Effective Learning and Assessment

Designing effective learning experiences requires the selection of activities that develop students' knowledge, understanding and skills and that allow evidence of learning to be gathered. Methods of gathering evidence could include informal teacher observation, questioning, peer evaluation and self-evaluation, as well as more structured assessment activities. Assessment should be an integral part of each unit of work and should support student learning.

When designing assessment activities, teachers should consider whether the activity:

- has explicitly stated purposes that address the outcomes
- is integral to the teaching and learning program
- shows a clear relationship between the outcomes and content being assessed
- allows students to demonstrate the extent of their knowledge, understanding and skills
- focuses on what was taught in class and what students were informed would be assessed
- provides opportunities to gather information about what further teaching and learning is required for students to succeed
- provides valid and reliable evidence of student learning and is fair.

3.4 Annotated Assessment for Learning Activity

The *Assessment for Learning Principles* provide the criteria for judging the quality of assessment materials and practices. The Stage 5 sample assessment activity, ‘Storage Solution’, has been annotated to show these principles.

AP1 The activity shows the knowledge, skills and understanding that are being built on

AP1 The activity has a clear statement of purpose

Context

Students in Stage 5 have explored the steps in the design process and have had some experience in collaborative activities. This activity is an introductory stimulus to the unit of work where students will be encouraged to think about the properties of storage devices in relation to their purpose.

Outcomes

A student:

- 5.1.1 analyses and applies a range of design concepts and processes
- 5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions
- 5.6.1 selects and applies management strategies when developing design solutions.

AP1 The activity lists the outcome(s) to be addressed

Description of activity

Students collaboratively design and produce a functional and innovative storage solution for a teacher-identified scenario. They manage the process of development and use of the solution, and evaluate its effectiveness in response to the requirements of the activity. The suggested duration is 4–5 lessons (160 minutes).

AP6 The activity is inclusive of gender, ethnicity, and a variety of socio-economic and geographical groupings

AP3 The activity models an approach that has the activity as an integral component of the learning.

AP3 The activity has the capacity to engage the learner
AP3 The activity has been designed to target skills and understanding that lead to deeper learning as well as knowledge.

Criteria for assessing learning

(These criteria would normally be communicated to students with the activity)

Students will be assessed on their ability to:

- design and produce a functional solution that is innovative and appropriate to the need
- employ collaborative design practices and manage the process of design development
- evaluate the design solution in relation to the identified need.

AP2 The link between the marking guidelines and/or criteria for assessing learning and the outcome is clear and explicit
AP2 The language of the marking guidelines and/or criteria for assessing learning and the outcomes is clear and explicit.

AP4 Marking guidelines reflect the nature and intention of the activity and will be expressed in terms of the knowledge and skills demanded by the activity

Guidelines for marking

The following guidelines for marking show one approach to assigning a value to a student's work. Other approaches may be used that better suit the reporting process of the school. Categories, marks, grades, visual representations or individual comments/notations may all be useful.

Range	A student in this range:
High (8–10)	<ul style="list-style-type: none"> • designs and produces a functional and innovative solution that is appropriate to the identified need • effectively collaborates and competently manages the design process • evaluates the solution in relation to the identified need
Satisfactory (4–7)	<ul style="list-style-type: none"> • designs and produces a working solution that demonstrates some innovation and is appropriate to the identified need • cooperates with team members and applies sound management practices in the design process • explains the solution in relation to the identified need
Progressing (1–3)	<ul style="list-style-type: none"> • designs and produces a solution that demonstrates limited innovation for an identified need • cooperates in a limited way with team members and applies simple management practices in the design process • describes the solution in relation to the identified need.

AP5 Provides ways for students to use feedback from assessment

Feedback

The teacher provides oral feedback to students. Comments will inform them about their ability to:

- design and produce innovative solutions appropriate to an identified need
- collaborate and manage the design process
- evaluate the solution in relation to the identified need.

Future directions

As a result of this activity students have developed an understanding of, and skill in, ways to generate innovative design ideas. They have developed skills in collaboration in completing all aspects of the activity. This learning can be further developed through group work where students evaluate the results of other groups and the success of the designed solutions. Skills developed in this activity can be used when developing ideas for the design project of a storage solution.

AP1 The activity forms part of the learning and has clear links to learning goals

Assessment for Learning Principles

The following table shows some of the criteria that have been used to annotate the *assessment for learning* activity in this document. This list of criteria is not exhaustive, it has been included to provide support in understanding the *assessment for learning* principles.

It is not envisaged that teachers will use this table as a checklist each time an assessment activity is developed. However, this could be a valuable tool for use in staff development activities.

Assessment principle 1	Related criteria
<i>The activity emphasises the interactions between learning and manageable assessment strategies that promote learning</i>	<ul style="list-style-type: none"> • The activity has a clear statement of purpose. • The activity lists the outcome(s) to be addressed. • The activity is appropriate for the outcomes being assessed. • The activity forms part of the learning and has clear links to learning goals. • The activity shows the knowledge, skills and understanding that are being built on.
Assessment principle 2	Related criteria
<i>The activity clearly expresses for the student and teacher the goals of the learning activity</i>	<ul style="list-style-type: none"> • The link between the marking guidelines and/or criteria for judging performance and the outcomes is clear and explicit. • The language of the marking guidelines and/or criteria for judging performance and the outcomes is clear and explicit. • The activity clearly indicates the knowledge, skills and understanding to be developed.
Assessment principle 3	Related criteria
<i>The activity reflects a view of learning in which assessment helps students learn better, rather than just achieve a better mark</i>	<ul style="list-style-type: none"> • The activity has the capacity to engage the learner. • The activity has been designed to target skills and understandings that lead to deeper learning as well as knowledge. • The activity models an approach that has the activity as an integral component of the learning.
Assessment principle 4	Related criteria
<i>The activity provides ways for students to use feedback from assessment</i>	<ul style="list-style-type: none"> • Marking guidelines and/or criteria for judging performance reflect the nature and intention of the activity and will be expressed in terms of the knowledge and skills demanded by the activity. • Marking guidelines and/or criteria for judging performance enable meaningful and useful information on performance, relative to the outcomes, to be gathered and reported.
Assessment principle 5	Related criteria
<i>The activity is designed so as to help students take responsibility for their own learning</i>	<ul style="list-style-type: none"> • The activity models ways that self and peer-assessment can be used as valid means of assessment.
Assessment principle 6	Related criteria
<i>The activity has been designed so as to be inclusive of all learners</i>	<ul style="list-style-type: none"> • The activity is inclusive of gender, ethnicity, and a variety of socio-economic and geographical groupings.

3.5 Sharing Learning and Assessment Intentions

Students must be aware of what they need to do to demonstrate evidence of learning. This information could be conveyed informally or formally by the teacher, as appropriate for the learning activity. Students should be informed of the criteria that will be used to assess their learning. They should be clear about the meaning of the language used, and the subject-specific terminology. They also need to be clear about any sources or stimulus material that are appropriate to the activity.

It may be helpful to give students models of good responses and templates, or procedures to help them demonstrate the extent of their knowledge, understanding and skills.

3.6 Effective Feedback to Students

The aim of feedback is to communicate to students how well their knowledge, understanding and skills are developing in relation to the outcomes. Feedback enables students to recognise their strengths and areas for development, and to plan with their teacher the next steps in their learning. They are then given opportunities to improve and further develop their knowledge, understanding and skills.

Teacher feedback about student work is essential for students and is integral to the teaching and learning process. Student self-reflection and peer evaluation can also provide valuable feedback to students. Students should be provided with regular opportunities to reflect on their learning.

Feedback should:

- focus on the activity and what was expected
- be constructive, providing meaningful information to students about their learning
- correct misunderstandings
- identify and reinforce students' strengths and state clearly how students can improve.

Forms of feedback include:

- oral discussion with class, groups or individual students
- written annotations
- general comments to the class about those aspects of the activity in which students excelled and those aspects that still need addressing
- examples of good responses
- peer evaluation and self-evaluation.

3.7 Recording Evidence for Assessment

Recording student performance needs to be manageable. Teachers should make decisions about which aspects of student performance on an activity should be recorded, and in what format. The teacher can use this information to ascertain students' progress, what needs to be taught next and to what level of detail, and to form a judgement of student achievement at key points.

Record-keeping should reflect the reporting processes of the school and may take the form of individual comments or notations, marks, grades or visual representations for the activities.

A scale such as the one below may be a useful way to summarise the extent of students' learning. This example shows how individual students performed on the same assessment activity.

Student	Activity – Storage Solution
A	x
B	x
C	x
D	x
E	x
F	x
	Progressing Satisfactory High

This method can be adapted to capture evidence of an individual student's strengths and weaknesses on various elements of one activity, or the performance of a particular student, class, group or cohort of students, across a range of assessment activities.

4 Programming Units of Work

The *Design and Technology Years 7–10 Syllabus* promotes an approach to programming which has outcomes as the focus. The sample units of work in section 5 have been developed using the following process:

Step 1

- a) Decide on the focus area of design that will provide the context for the development of the design project.
- b) Decide on the design project for the unit of work.
- c) Identify outcomes to be targeted in the unit of work. Ensure they are manageable in number.

Step 2

Decide on the specific evidence of learning to be observed through the teaching, learning and assessment activities. This evidence will facilitate judgements of student achievement in relation to the outcomes and identified content.

Step 3

- a) Select the relevant syllabus content (identifying what students are going to ‘learn about’ and ‘learn to’). Consider the selected outcomes and identify and integrate into a logical sequence the content from the ‘learn about’ column. The amount of content selected should be manageable in the time allocated to the unit. Note that the ‘learn to’ statement has a direct relationship to the ‘learn about’ statement located next to it.
- b) Plan the teaching and learning strategies for the identified content and decide on the assessment for learning strategies that will provide evidence of learning. Assessment for learning activities occur as a normal part of the teaching process. Strategies should include a range of student-centred experiences that promote the development of knowledge, understanding and skills. Teachers should ensure that a range of practical experiences occupy the majority of class time.

Step 4

Provide feedback so that students have the necessary information and direction to progress their learning. Teachers should consider how to maximise feedback in the context of the teaching, learning and assessment activities and how the feedback contributes to student learning.

Step 5

Reflect on the previous steps and evaluate the degree to which the unit has remained focused on the outcomes.

4.1 Sample Unit Proforma

Teachers can design a unit proforma that best meets their specific needs and circumstances. The sample unit proforma provided below has been annotated to highlight the characteristics of each section.

Unit title:

Unit description: <div data-bbox="349 563 1090 651" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> Identify the focus area of design to be addressed in this unit of work to ensure the syllabus requirements are met. </div>	Outcomes: <div data-bbox="1491 488 2002 571" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> Identify outcomes to be targeted in the unit. Ensure they are manageable in number. </div>
Focus area/s of design: Design Project:	<div data-bbox="996 746 1675 805" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> Allocate time to deal with the content in appropriate depth. </div>
Length of unit:	
Resources:	<div data-bbox="443 869 1193 927" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> Identify the resources useful for the delivery of the unit of work. </div>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment	Evidence of learning:	Feedback
<div data-bbox="96 1153 685 1332" style="border: 1px solid black; padding: 10px;"> Identify from the syllabus appropriate content related to the selected outcomes. Ensure that the selection provides an increase in sophistication and challenge over the 200 hours and is manageable in the time allocated. </div>		<div data-bbox="734 1137 1290 1353" style="border: 1px solid black; padding: 10px;"> Describe learning experiences, instruction and assessment best suited to the syllabus content and that allow students to provide the required evidence of learning in relation to the outcomes. Ensure that a range of practical experiences occupy the majority of class time. </div>	<div data-bbox="1350 1129 1648 1369" style="border: 1px solid black; padding: 10px;"> Decide on the observable evidence resulting from the activity that will allow judgments to be made on achievement in relation to outcomes. </div>	<div data-bbox="1664 1129 2027 1297" style="border: 1px solid black; padding: 10px;"> Identify the nature and type of feedback and how it contributes to student learning. </div>

5 Sample Units of Work

The sample units of work that follow are designed to assist teachers as they plan for the implementation of the *Design and Technology Years 7–10 Syllabus*. The units provide programming ideas for selected syllabus content.

The sample units show ways in which teachers can meet the needs, interests and abilities of their students, while assessing their progress towards a demonstration of outcomes. The sample units also illustrate ways in which assessment activities may be integrated into the teaching and learning sequence. They will assist teachers to understand the importance of:

- being explicit about the outcomes and content they are addressing
- being explicit about the evidence required to demonstrate student learning
- providing meaningful feedback to students
- adapting teaching and learning programs to students' demonstrated needs
- having a sound basis for modifying future teaching and learning programs (in light of students' demonstrated needs).

The sample units provide opportunities for students to engage in questioning and dialogue, collaboration, self-assessment, peer assessment and reflection. Through these activities students can become clear about their own learning, understanding and needs.

Note that the assessment activities are described here in some detail to illustrate the process of *assessment for learning*. Teachers would not provide this level of detail in day-to-day classroom situations.

5.1 Sample Unit 1: Safe and Sound

<p>Unit description: People have used storage devices to transport, secure and display a range of items. In our daily lives we regularly use different storage devices – school bag, lunch box, book shelf, wallet, glasses case, guitar case, refrigerator, pantry etc. In the past natural materials such as animal skins, reeds and timber were used to construct storage devices. Technological developments have led to the development of a broad range of materials such as polystyrene, aluminium, and tyvec. Students are required to design, produce and evaluate a storage device for an identified item or items. They may select the material or it can be designated by the teacher.</p>	<p>Outcomes A student:</p> <ul style="list-style-type: none"> 5.1.1 analyses and applies a range of design concepts and processes 5.1.2 applies and justifies an appropriate process of design when developing design ideas and solutions 5.3.2 evaluates designed solutions that consider preferred futures, the principles of appropriate technology and ethical and responsible design 5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions 5.5.1 uses appropriate techniques when communicating design ideas and solutions to a range of audiences 5.6.1 selects and applies management strategies when developing design solutions 5.6.3 selects and uses a range of technologies competently in the development and management of quality design solutions
<p>Focus area of design: Furniture or packaging Design project: Storage Solution</p>	
<p>Length of unit: 10 weeks</p>	
<p>Resources: Stimulus activity: sand/sugar, paper. Access to computer hardware such as digital cameras, scanners and software such as graphics, word processing, spreadsheets, desktop publishing, multi-media presentation, Materials, tools and equipment appropriate to the selected design project.</p>	

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Research and exploration <ul style="list-style-type: none"> criteria for success resource requirements Creative and innovative idea-generation using <ul style="list-style-type: none"> brainstorming concept sketches and maps modelling interaction of hand and mind observation research collaboration 	<ul style="list-style-type: none"> establish the criteria for success for the design project investigate and calculate resource requirements for the design project use idea generation techniques when developing creative design ideas collaborate when developing design ideas 	Teacher <ul style="list-style-type: none"> sets the challenge in an introductory stimulus activity where groups of 3-4 students design, produce and evaluate a storage solution. They are given a cup of sugar and a piece of paper approx 20cm square. The sugar has magical properties. It must not be exposed to light and not one grain can be lost or its magical properties disappear. Sugar to be transported a designated distance and follow a designated route in a carry bag [see page 28 for details] Students <ul style="list-style-type: none"> form groups and discuss and identify the criteria for success for the activity create a storage device out of paper to carry the sugar carry the 'bag' for a specified distance or time to determine success 	<p>Student-completed solution demonstrates their understanding of the ways of generating creative and innovative ideas and developing a solution</p>	<p>Teacher observation and oral feedback on the generation on creative and innovative ideas and the development of a solution</p>
Enterprising activity Management <ul style="list-style-type: none"> project management strategies when implementing and evaluating a process of design Evaluating <ul style="list-style-type: none"> criteria for success evaluation techniques 	<ul style="list-style-type: none"> define and describe enterprising activity manage materials, tools and techniques when developing a design project document and evaluate decisions made throughout the design process using specified criteria for success self-assess and peer-assess designed solutions justify and document decisions made during the development of designed solutions 	Class <ul style="list-style-type: none"> discusses and notes the aspects of the activity that make it enterprising Students <ul style="list-style-type: none"> form groups and evaluate the solution in terms of the criteria for success discuss their solution and report to the class on its effectiveness and the reasons for success or failure evaluate and document the strengths and weaknesses of the solution and think about making a storage device for a different purpose 	<p>Student demonstrates understanding of the criteria for success when evaluating the solution Student contributions to the group task reflect their understanding of the ways to collaborate Student documentation evaluating the solution shows their understanding of enterprising activity As groups evaluate their solutions they demonstrate their ability to self-assess and peer assess</p>	<p>Teacher observation and oral feedback of group work and ways they collaborated</p> <p>Teacher gives written feedback on evaluation</p> <p>Self and peer assessment provides feedback on solutions</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
The concepts of design <ul style="list-style-type: none"> purposes of design interrelationship of design with technology Research and exploration <ul style="list-style-type: none"> access information and data The work of past and current designers across a range of settings <ul style="list-style-type: none"> cultural commercial industrial historical contemporary, including Aboriginal and Torres Strait Islanders and other Indigenous peoples and the contributions of males and females to design industries 	<ul style="list-style-type: none"> identify the purpose of design analyse a designed solution and identify how it was affected by the technologies and tools used in its development identify and summarise information from a range of sources for the design project examine and describe the work of past and current designers across a range of settings and from a range of focus areas of design 	Students <ul style="list-style-type: none"> investigate a storage device using a range of sources, eg quiver, dilly bag, swag, Grecian urn, and identify its purpose research the historical and cultural significance of the storage device and complete accurate sketches of the item noting the design features and materials used analyse the storage device and identify how its design was affected by technologies used in its development reflect on and note the interrelationship of design with technology for the storage item 	<p>Student research on storage devices demonstrates their ability to investigate using a range of sources and their understanding of purposes of design. When they analyse the storage device they show their understanding of the interrelationship between design with technology</p>	<p>During student research teacher observes them using a range of information sources and gives oral feedback on how they access information</p>
Preferred futures Trends in technology and design <ul style="list-style-type: none"> in history across contemporary cultures Communication and presentation techniques <ul style="list-style-type: none"> visual graphical written oral 	<ul style="list-style-type: none"> analyse some exemplary designed solutions and predict directions in selected focus areas recognise trends of designed solutions in history and across contemporary culture use ICT applications such as multimedia communication devices, computer-generated 	Teacher <ul style="list-style-type: none"> explains preferred futures Class <ul style="list-style-type: none"> discusses the concept of preferred futures in relation to food storage, file storage and packaging Students <ul style="list-style-type: none"> form groups and research trends in storage solutions, analysing an example of an exemplary storage solution and predicting future directions for the item present their findings as a multimedia presentation to the class 	<p>Oral discussion shows students' understanding of preferred futures Student multimedia presentation demonstrates their research skills and ability to compose a multimedia presentation that reflects their understanding of trends and preferred futures</p>	<p>Teacher observation and oral feedback during discussion Teacher and peers give oral and written feedback on the multimedia presentation</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
<ul style="list-style-type: none"> digital 	graphics, word processing and desktop publishing for presentation of documentation			
Identification of needs and opportunities <ul style="list-style-type: none"> requirements of end-users and stakeholders 	<ul style="list-style-type: none"> identify the needs of end-users and other stakeholders in their settings 	Class <ul style="list-style-type: none"> brainstorms list of items that need storing and identify the needs requirements Students <ul style="list-style-type: none"> form groups, examine and discuss a range of storage devices (eg timber bookcase, acrylic serviette holder, leather wallet) and note how the storage device meets the requirements of the items 	Student list formulated from brainstorming reflects their understanding of need requirements Group discussion shows students' understanding of meeting needs of the user	Teacher observes group discussion and gives oral feedback on meeting user needs
Factors affecting an holistic approach to design and production <ul style="list-style-type: none"> design purpose and setting factors <ul style="list-style-type: none"> function form aesthetics end-user aspirations and context time factors: historical, contemporary and future considerations quality trends human, technical and environmental factors <ul style="list-style-type: none"> human capital (knowledge, skills and techniques) ergonomics safety, values and ethics industrial and workplace legislation 	<ul style="list-style-type: none"> describe factors affecting the design and production of design ideas and solutions from selected focus areas of design analyse and report on the factors that affect the decisions taken in the development of design ideas and solutions apply a holistic approach by considering the factors affecting design and production in a design project 	Teacher <ul style="list-style-type: none"> introduces the factors affecting an holistic approach to design and production and discusses those impacting on design, purpose and setting and those impacting on human, technical and environmental concerns demonstrates how to analyse the factors that have been considered in the design of a storage solution Students <ul style="list-style-type: none"> select an example of their own choice and analyse the factors affecting design of the item document the analysis and present the results to the class 	Student written response demonstrates their ability to analyse the item in terms of the factors affecting a holistic approach to design	Teacher gives written feedback on the analysis of a selected storage device

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
<ul style="list-style-type: none"> – appropriateness of technology choices and design decisions – social and environmental sustainability – resource choices and availability (tools, materials, time, finance) 				
Research and exploration <ul style="list-style-type: none"> • access information and data • market research techniques 	<ul style="list-style-type: none"> • use electronic communication tools to research information • use market research techniques for a targeted group of end-users to develop and test design ideas 	Students <ul style="list-style-type: none"> • form groups and mind-map for a selected focus area the range of products available in the marketplace • select one product and investigate its characteristics and features using the internet • conduct an interview with potential users of the storage device to identify and clarify needs • document investigations and findings of the identified product and prepare a report 	<p>Mind map activity shows student ability to think laterally and creatively</p> <p>Students' use of interviews demonstrate their ability to access information</p> <p>Student report indicates their ability to use findings from research</p>	<p>Oral feedback from teacher on student mind maps</p> <p>Teacher gives written feedback on report</p>
Identification of needs and opportunities <ul style="list-style-type: none"> • opportunities for new and better solutions • requirements of end-users and stakeholders Research and exploration <ul style="list-style-type: none"> • criteria for success 	<ul style="list-style-type: none"> • identify opportunities for new and better solutions • identify the needs of the end-users and other stakeholders in their settings • establish the criteria for success for the design project 	Students <ul style="list-style-type: none"> • identify a need or opportunity for the development of a storage solution for the design project • research the needs of the end-users and document the findings • establish criteria for success for the design project 	<p>Criteria for success demonstrate the ability to identify the requirements of the user of the storage device</p>	<p>Oral feedback from teacher on the criteria for success</p>
Creative and innovative idea-generation using <ul style="list-style-type: none"> • brainstorming • concept sketches and maps • modelling • interaction of hand and mind • observation • research • collaboration 	<ul style="list-style-type: none"> • use idea generation techniques when developing creative design ideas 	Students <ul style="list-style-type: none"> • use concept sketches and/or models to visualise ideas for the design project • evaluate the ideas presented and justify the selection of the design features • refine their drawings and produce working drawings for production using computer applications such as computer-generated graphics, word processing and desktop publishing 	<p>Student concept sketches and models demonstrate their skill in generating creative and innovative design ideas</p> <p>Computer-generated design ideas show students' ability to use ICT</p>	<p>Ongoing discussion with peers and teacher about design ideas provides feedback to student</p> <p>Teacher observation and oral feedback when using ICT</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Experimentation <ul style="list-style-type: none"> testing and experimenting Communication and presentation techniques <ul style="list-style-type: none"> visual graphical written oral digital 	<ul style="list-style-type: none"> refine design ideas to address needs and opportunities use ICT applications such as multimedia communication devices, computer-generated graphics, word processing and desktop publishing for presentation of documentation construct and use models or computer-generated simulations to communicate design ideas and solutions 	<ul style="list-style-type: none"> document design ideas using a design folio and present the final ideas to the class, justifying their decisions 	<p>Students use of computer applications demonstrates their ICT skills</p> <p>As students present their ideas to their peers they demonstrate their ability to verbalise the design solution and to relate design decisions to their investigations</p>	<p>Teacher provides written feedback on computer-generated design folio</p> <p>Feedback from peers and teacher on final ideas</p>
Research and exploration <ul style="list-style-type: none"> access information and data resource requirements 	<ul style="list-style-type: none"> research appropriate materials, processes and production methods for the design project investigate and calculate resource requirements for the design project 	Students <ul style="list-style-type: none"> identify the materials to be used in the design project and research the properties and characteristics of one material experiment with tools and techniques for the design project document the decisions made and justify the choice of materials, tools and techniques 	<p>Documenting of decisions demonstrates student knowledge of materials, tools and techniques and their ability to relate these to the requirements of the design project</p>	<p>Written feedback from the teacher on student decisions and justification of the choice of materials, tools and techniques</p>
Research and exploration <ul style="list-style-type: none"> access to information and data 	<ul style="list-style-type: none"> interpret and manipulate data to develop information solutions using ICT applications including spreadsheets and databases 	Students <ul style="list-style-type: none"> identify the materials and quantities required for the design project calculate the costs and use a spreadsheet to develop a budget for the design project 	<p>Budget shows students' ability to calculate the resource costs and how they use ICT to record the budget</p>	<p>Teacher gives oral feedback on the calculation of the budget and the use of ICT</p>
Experimentation <ul style="list-style-type: none"> testing and experimenting 	<ul style="list-style-type: none"> refine design ideas to address needs and opportunities 	Students <ul style="list-style-type: none"> conduct tests and investigate materials, tools and techniques as appropriate to the design project refine their ideas and select materials, tools, equipment and techniques appropriate to the design project justify and document the selection of materials, tools, equipment and techniques 	<p>Student record of testing shows evidence of research and its application</p> <p>As the student justifies the choice of materials, tools and techniques they demonstrate the ability to link the results of investigations to the decision made</p>	<p>Written feedback from teacher on documentation</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Management <ul style="list-style-type: none"> project management strategies when implementing and evaluating a process of design 	<ul style="list-style-type: none"> prepare and implement time and action plans in design projects manage materials, tools and techniques when developing the design project 	Students <ul style="list-style-type: none"> construct a time line for the design project showing anticipated and actual timing develop a production plan for the solution showing the materials, tools and techniques to be used 	<p>The time line demonstrates student ability to plan and to document changes and their understanding of the steps of production</p>	<p>Written feedback from teacher on planning documentation</p>
Realisation of design ideas using technologies including <ul style="list-style-type: none"> tools and equipment materials techniques Management <ul style="list-style-type: none"> safe working practices and safe environments 	<ul style="list-style-type: none"> identify a range of tools and equipment, materials and techniques, and calculate requirements for each design project select and use tools and equipment when designing and producing each design project select and use appropriate materials when designing and producing each design project select and use a variety of appropriate techniques when designing and producing each design project demonstrate safe work practices when producing design projects 	Students <ul style="list-style-type: none"> use the selected materials, tools and techniques to produce the design solution work safely and efficiently when producing the design solution 	<p>As they make choices the student demonstrates their knowledge of materials, tools and techniques and safe work practices</p>	<p>Teacher observation and oral feedback on safe work practices as they engage in the production of the solution</p>
Evaluating <ul style="list-style-type: none"> criteria for success evaluation techniques 	<ul style="list-style-type: none"> document and evaluate decisions made throughout the design process using specific criteria for success justify and document decisions made during the development of designed solutions 	Students <ul style="list-style-type: none"> evaluate the solution in terms of the criteria for success justify and document the decisions made in the design folio Teachers and peers <ul style="list-style-type: none"> assess the solution in terms of the criteria for success. 	<p>Ongoing student evaluation demonstrates their ability to reflect on their learning and evaluate the consequences of their decisions</p> <p>Feedback to peers demonstrates student ability to recognise quality and to evaluate in response to the identified need</p>	<p>Written feedback from teacher on the success of the design project</p> <p>Oral feedback from peers and teacher</p>

5.1.1 Sample Assessment for learning activity: Storage Solution

Context

Students in Stage 5 have explored the steps in the design process and have had some experience in collaborative activities. This activity is an introductory stimulus to the unit of work where students will be encouraged to think about the properties of storage devices in relation to their purpose.

Outcomes

A student:

- 5.1.1 analyses and applies a range of design concepts and processes
- 5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions
- 5.6.1 selects and applies management strategies when developing design solutions.

Description of activity

Students collaboratively design and produce a functional and innovative storage solution for a teacher-identified scenario. They manage the process of development and use of the solution, and evaluate its effectiveness in response to the requirements of the activity. The suggested duration is 4–5 lessons (160 minutes).

Criteria for assessing learning

(These criteria would normally be communicated to students with the activity)

Students will be assessed on their ability to:

- design and produce a functional solution that is innovative and appropriate to the need
- employ collaborative design practices and manage the process of design development
- evaluate the design solution in relation to the identified need.

Guidelines for marking

The following guidelines for marking show one approach to assigning a value to a student's work. Other approaches may be used that better suit the reporting process of the school. Categories, marks, grades, visual representations or individual comments/notations may all be useful.

Range	A student in this range:
High (8–10)	<ul style="list-style-type: none">• designs and produces a functional and innovative solution that is appropriate to the identified need• effectively collaborates and competently manages the design process• evaluates the solution in relation to the identified need
Satisfactory (4–7)	<ul style="list-style-type: none">• designs and produces a working solution that demonstrates some innovation and is appropriate to the identified need• cooperates with team members and applies sound management practices in the design process• explains the solution in relation to the identified need
Progressing (1–3)	<ul style="list-style-type: none">• designs and produces a solution that demonstrates limited innovation for an identified need• cooperates in a limited way with team members and applies simple management practices in the design process• describes the solution in relation to the identified need.

Feedback

The teacher provides oral feedback to students. Comments will inform them about their ability to:

- design and produce innovative solutions appropriate to an identified need
- collaborate and manage the design process
- evaluate the solution in relation to the identified need.

Future directions

As a result of this activity students have developed an understanding of, and skill in, ways to generate innovative design ideas. They have developed skills in collaboration in completing all aspects of the activity. This learning can be further developed through group work where students evaluate the results of other groups and the success of the designed solutions. Skills developed in this activity can be used when developing ideas for the design project of a storage solution.

Resources

Teacher-identified scenario for the activity

5.2 Sample Unit 2: What's New?

Unit description: Throughout history innovations have provided the opportunity for us to do things better, safer, faster and more efficiently. Design must be appropriate to the market, the product and the client. Students investigate innovation and enterprising activity and identify a need or opportunity for the development of their own design project from a negotiated area of design.	Outcomes A student: 5.1.2 applies and justifies an appropriate process of design when developing design ideas and solutions 5.2.1 evaluates and explains the impact of past, current and emerging technologies on the individual, society and environments 5.3.1 analyses the work and responsibilities of designers and the factors affecting their work 5.4.1 develops and evaluates innovative, enterprising and creative design ideas and solutions 5.5.1 uses appropriate techniques when communicating design ideas and solutions to a range of audiences 5.6.1 selects and applies management strategies when developing design solutions 5.6.3 selects and uses a range of technologies competently in the development and management of quality design solutions
Focus Area of Design: Student negotiated	
Length of unit: 10 weeks	
Resources: Useful websites: www.chindogu.com , www.swin.edu.au/afi , www.abc.net.au/dimensions/dimensions_future/ Access to a range of computer software such as graphics, word processing, spreadsheets, desktop publishing, multi-media presentation. Materials, tools and equipment appropriate to the selected project	

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Innovation <ul style="list-style-type: none"> examples of innovation Creative and innovative idea-generation using <ul style="list-style-type: none"> brainstorming concept sketches and maps modelling interaction of hand and mind observation research collaboration Communication techniques <ul style="list-style-type: none"> visual graphical written oral digital 	<ul style="list-style-type: none"> identify a variety of past, current and emerging technologies and innovations across a range of focus areas use idea-generation techniques when developing creative design ideas apply appropriate communication techniques when documenting and presenting design ideas and solutions 	Teacher <ul style="list-style-type: none"> explains innovation Students <ul style="list-style-type: none"> investigate innovative products on sites such as www.chindogu.com as a stimulation activity discuss and evaluate functional and aesthetic qualities of the innovative products brainstorm and document innovative ideas select a pictogram (signs with simplified pictures) and produce a pictogram to improve the chosen sign 	<p>Class discussion and brainstorming shows student understanding of innovative products.</p> <p>The completed pictogram indicates student ability to generate and communicate design ideas.</p>	<p>Teacher observation and oral feedback during discussion</p> <p>Pictograms displayed in the room for teacher, self and peer oral evaluation</p>
Innovation <ul style="list-style-type: none"> types of innovation 	<ul style="list-style-type: none"> define and describe innovation 	Students <ul style="list-style-type: none"> define innovation using think, pair and share strategy. Final definition should include the words 'new' and 'change' or similar words 	<p>Student definition shows their understanding of innovation</p>	<p>Teacher observation during pair work and oral feedback on definition</p>
Innovation <ul style="list-style-type: none"> examples of innovation Ethical and responsible design	<ul style="list-style-type: none"> identify a variety of past, current and emerging technologies and innovations across a range of focus areas discuss issues relating to ethical and responsible design 	Students <ul style="list-style-type: none"> brainstorm and map innovations such as wine cask, telephone, Velcro, ceramic, bionic ear, IVF, black box, fridge, rubber discuss and note why they are considered innovations and the issues relating to ethical and responsible design of such innovations 	<p>Students' brainstorming and oral discussion of innovations reveals their knowledge and understanding of issues relating to ethical and responsible design</p>	<p>Teacher observation of group brainstorming activity. Teacher gives oral feedback during discussion of design</p>
Impact of technologies on <ul style="list-style-type: none"> the individual society (different cultural groups, including 	<ul style="list-style-type: none"> evaluate and explain the impact of past, current and emerging technologies on the 	Class <ul style="list-style-type: none"> discusses a case study on a current or emerging technology such as mobile phones 		

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
<p>Aboriginal and Torres Strait islanders and other Indigenous peoples)</p> <ul style="list-style-type: none"> environments 	<p>individual, society and environments</p>	<p>Students</p> <ul style="list-style-type: none"> produce a report on the impact of the technology on the individual and society and present their findings to the class 	<p>Written response to a case study demonstrates student understanding of the impact of ethical and responsible design</p>	<p>Teacher gives written feedback on student report</p>
<p>Research and exploration</p> <ul style="list-style-type: none"> access information and data <p>The work of past designers across a range of settings</p> <ul style="list-style-type: none"> cultural commercial industrial historical contemporary, including Aboriginal and Torres Strait Islanders and other Indigenous peoples and the contributions of males and females to design industries 	<ul style="list-style-type: none"> identify and summarise information from a range of sources for the design project examine and describe the work of past designers across a range of settings and from a range of focus areas of design 	<p>Students</p> <ul style="list-style-type: none"> research the development of the automobile by Henry Ford and consider this statement: ‘If you knew then what you know now about the impact of automobiles on society, would you have put in all the money that you did to make the innovation a viable one?’ Research to be documented and used for role-play and exposition 	<p>Research demonstrates student ability to access information and their understanding of the work of designers</p>	<p>Teacher gives oral feedback during research and on completion of research</p>
<p>Enterprising activity</p>	<ul style="list-style-type: none"> recognise enterprising activity as related to designers and their work within a focus area of design 	<p>Students</p> <ul style="list-style-type: none"> engage in a role-play: ‘Henry Ford has been brought forward in time to the 21st century with the aid of a time machine. A panel of people have been assembled to pose questions to Henry Ford about his invention of the automobile and its impact on the past, present and future.’ 	<p>Oral responses to the case study during the role-play demonstrate student understanding of the impact of the automobile on the individual, society and environment from various perspectives</p>	<p>Teacher gives oral feedback during the discussion and during reflection</p>
<p>Impact of technologies on</p> <ul style="list-style-type: none"> the individual society environments <p>Ethical and responsible design</p>	<ul style="list-style-type: none"> evaluate and explain the impact of past, current and emerging technologies on the individual, society and environments explain the need for ethical, responsible design and appropriate technology when 	<p>Students</p> <ul style="list-style-type: none"> reflect on the points of view from the role play and engage in class discussion write an exposition from the perspective of Henry Ford based on the research, role play and class discussion considering the question ‘If you knew then what you know today about the impact of automobiles on society, would you have put in all the money you did to make the innovation a viable one?’ (see p 38 for details) 	<p>Written responses in the form of an <i>exposition</i> to demonstrate student understanding of the impact of the automobile on the individual, society and environment and how designers consider ethical issues and future trends</p>	<p>Teacher gives written feedback on exposition</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Preferred futures	<ul style="list-style-type: none"> developing design ideas and solutions identify visions for preferred futures in design and technology 			
Factors affecting a holistic approach to design and production <ul style="list-style-type: none"> human, technical and environmental factors <ul style="list-style-type: none"> human capital (knowledge, skills and techniques) ergonomics safety, values and ethics industrial and workplace legislation appropriateness of technology choices and design decisions social and environmental sustainability resource choices and availability (tools, materials, time, finance) Creative and innovative idea-generation using <ul style="list-style-type: none"> collaboration 	<ul style="list-style-type: none"> describe factors affecting the design and production of design ideas and solutions from selected focus areas of design analyse and report on the factors that affect the decisions taken in the development of design ideas and solutions collaborate when developing design ideas and solutions 	Students <ul style="list-style-type: none"> brainstorm and mind map a range of environmental issues such as rubbish at school, reduction of water usage, oil leaks, passive smoking, back burning, and plastic bags form groups, select an environmental issue, discuss and develop an innovative solution to the problem present the problem, describing the human, technical and environmental factors affecting the design development and the solution to the class list long-term consequences of the innovative solution 	Brainstorming by students demonstrates their understanding of environmental issues. Discussion in groups reveals student understanding of the factors affecting the holistic approach to design and production. Group presentation demonstrates an understanding of the long-term consequences of innovative solutions Written responses by individual students after group presentation shows their understanding of long-term consequences of the innovative solution	Teacher gives oral feedback during class discussion Teacher provides written feedback on group presentation Peer assessment of each other's presentations Teacher gives oral feedback on list of long-term consequences
Creativity and problem-solving techniques used by designers <ul style="list-style-type: none"> collaboration 	<ul style="list-style-type: none"> identify creativity and problem-solving techniques used by designers in their work 	Class <ul style="list-style-type: none"> discusses the value of collaboration for the completed task and lists the advantages and disadvantages of collaborative designing 	Class discussion reveals student knowledge of problem-solving techniques and collaboration	Teacher observation of class discussion and oral feedback

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Identification of needs and opportunities <ul style="list-style-type: none"> opportunities for new and better solutions requirements of end-users and stakeholders Research and exploration <ul style="list-style-type: none"> access information and data 	<ul style="list-style-type: none"> identify opportunities for new and better solutions identify the needs of the end-users and other stakeholders in their settings use electronic communication tools to research information identify and summarise information from a range of sources for the design project 	Students <ul style="list-style-type: none"> negotiate a focus area of design and an item and investigate and research in depth the needs of the end-users document all resources used including people interviewed, internet sites, shops, magazines, journals etc use graphical representation of the data collected through research and present in documentation. For example if the focus area is accessory design for campers then students interview campers, visit outdoor stores, search the internet and books and magazines on camping to identify the needs of the end-users 	<p>Student research findings demonstrate their skills in researching including the use of ICT</p> <p>Student documentation demonstrates their use of graphical representation of the data collected through research</p>	<p>Teacher observation and oral feedback on students use of ICT</p> <p>Teacher gives written feedback on documentation of student research</p>
Research and exploration <ul style="list-style-type: none"> criteria for success 	<ul style="list-style-type: none"> establish the criteria for success for the design project 	Students <ul style="list-style-type: none"> brainstorm ideas and identify a need or opportunity for the design project formulate their own design brief and, based on the findings from research, establish the criteria for success 	<p>The established criteria for success indicate student understanding of the needs of the end-users</p>	<p>Teacher provides oral feedback on the identified criteria for success</p>
Research and exploration <ul style="list-style-type: none"> market research techniques 	<ul style="list-style-type: none"> use market research techniques for a targeted group of end-users to develop and test design ideas 	Class <ul style="list-style-type: none"> discusses and notes market research techniques and the use of a SWOT analysis: S – strengths, W – weaknesses, O – opportunities, T – threats Students <ul style="list-style-type: none"> identify the target market for an identified need survey using open and closed questions to identify the needs and wants of the market translate results into graphs using an ICT application. 	<p>Class discussion reveals student understanding of market research</p> <p>Written response to the survey specific to each student's design solution reveals their knowledge about market research strategies</p>	<p>Oral feedback by teacher during class discussion.</p> <p>Teacher gives written feedback on student survey</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
<p>Creative and innovative idea-generation using</p> <ul style="list-style-type: none"> brainstorming concept sketches and maps <p>Factors affecting a holistic approach to design and production</p> <ul style="list-style-type: none"> design purpose and setting factors <ul style="list-style-type: none"> function form aesthetics end-user aspirations and context time factors: historical, contemporary and future considerations quality trends 	<ul style="list-style-type: none"> use idea generation techniques when developing creative design ideas describe factors affecting the design and production of design ideas and solutions from selected focus areas of design 	<p>Students</p> <ul style="list-style-type: none"> brainstorm and mind map ideas for the development of the design project use concept sketches to visualise and document ideas select three of the concept sketches developed and evaluate each idea in relation to the design purpose and setting factors affecting a holistic approach to design share design ideas and document the feedback provided by their peers refine ideas in the development of the solution 	<p>Brainstorming by students demonstrate their ability to use idea generation techniques</p> <p>Written evaluation of concept sketches reveals their understanding of design purpose and setting factors</p>	<p>Oral feedback provided by teacher as students develop solutions</p> <p>Written feedback given regarding the appropriateness of the concept sketches to the purpose</p>
<p>Communication and presentation techniques</p> <ul style="list-style-type: none"> visual graphical written oral digital 	<ul style="list-style-type: none"> apply appropriate communication techniques when documenting and presenting design ideas and solutions use ICT applications such as multimedia communication devices, computer-generated graphics, word processing and desktop publishing for presentation of documentation 	<p>Students</p> <ul style="list-style-type: none"> develop sketches and drawings of the final design idea and use an ICT application such as auto-sketch to generate the design solution develop design documentation using a combination of communication and presentation techniques 	<p>Student documentation demonstrates their ability to communicate design ideas in a variety of ways and their confident use of technology</p>	<p>Written feedback on student design documentation and the use of ICT</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Research and exploration <ul style="list-style-type: none"> resource requirements appropriate technology 	<ul style="list-style-type: none"> investigate and calculate resource requirements for the design project analyse costs and benefits including social, financial, environmental 	Students <ul style="list-style-type: none"> research resources and calculate the requirements for the design project develop and document a financial plan analyse the benefits of the design solution in terms of its financial, social, and environmental costs present their findings to the class 	Financial plans indicate student skill in calculating resource requirements Student presentations show their understanding of the costs and benefits of the design solution	Teacher gives written feedback on financial plan Teacher observation and oral feedback on presentation
Experimentation <ul style="list-style-type: none"> testing and experimenting 	<ul style="list-style-type: none"> assess the suitability of design ideas by testing and experimenting refine design ideas to address needs and opportunities experiment to optimise design solutions for student project work 	Students <ul style="list-style-type: none"> create a prototype and carry out experimentation with design ideas modify, refine and evaluate the suitability of the design idea as the result of experimentation and testing document experimentation and testing 	Prototype shows student's skill in refining and applying design ideas from testing and experimenting	Teacher observation and oral feedback of presentation
Management <ul style="list-style-type: none"> Occupational Health and Safety legislation and risk management practices 	<ul style="list-style-type: none"> apply risk management practices in each design project 	Students <ul style="list-style-type: none"> research OHS legislation and note the importance of this in both the classroom and the workplace discuss safe work practices in the work environment using case studies as the basis for discussion reflect on work practices used in past design projects and discuss ways of minimising risk 	When students identify the consequences of poor OHS management they demonstrate an understanding of risk management practices	Teacher gives written feedback on OHS research Self-evaluation and reflection on own work practices
Management <ul style="list-style-type: none"> project management strategies when implementing and evaluating a process of design 	<ul style="list-style-type: none"> prepare and implement time and action plans in design projects 	Students <ul style="list-style-type: none"> develop a time and action plan for the production of the design solution 	Student time and action plans reveal their understanding of the use of project management strategies	Teacher observation and oral feedback of time and action plans
Realisation of design ideas using technologies including <ul style="list-style-type: none"> tools and equipment materials techniques 	<ul style="list-style-type: none"> identify a range of tools and equipment, materials and techniques, and calculate requirements for each design project select and use tools and equipment when 	Teacher <ul style="list-style-type: none"> discusses the function and demonstrates the safe use of tools using the selected technology Students <ul style="list-style-type: none"> experiment with a variety of materials and techniques for producing the design solution. identify the materials, tools and techniques 	As students use the tools, materials and techniques appropriate to the design	Teacher observation of students' work practices and oral

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Management <ul style="list-style-type: none"> project management strategies when implementing and evaluating a process of design safe working practices and safe environments 	<ul style="list-style-type: none"> designing and producing each project select and use a variety of appropriate techniques when designing and producing each design project select and use appropriate materials when designing and producing each design project manage materials, tools and techniques when developing the design project demonstrate safe work practices when producing the design project 	<ul style="list-style-type: none"> required for the design solution and justify their choices select and safely use appropriate materials, tools and equipment for producing the solution from the identified technology produce the solution using the time and action plan developed 	<p>solution they demonstrate their understanding of safe work practices and management strategies</p> <p>Student demonstrates management strategies, safely using tools, materials and techniques, to produce the solution using the time and action plan</p>	<p>feedback</p>
Evaluating <ul style="list-style-type: none"> criteria for success evaluation techniques 	<ul style="list-style-type: none"> document and evaluate decisions made throughout the design process using specified criteria for success self-assess and peer-assess designed solutions 	<p>Teacher</p> <ul style="list-style-type: none"> evaluates the finished design project, using assessment criteria. <p>Students</p> <ul style="list-style-type: none"> evaluate their design solution against the criteria for success and identify the features that contribute to quality present their evaluation to the class peer-assess projects using criteria for success 	<p>Oral presentation by students shows their understanding of quality standards</p>	<p>Teacher observation and oral feedback on student project</p>

5.2.1 Sample assessment for learning activity: Exposition on Henry Ford

Context

Students in Stage 5 have defined and described innovation and identified a variety of past, present and emerging technologies and innovations. They have researched the development of the automobile by Henry Ford, engaged in a role-play and discussed their findings and experiences. In this activity students write an *exposition* from the perspective of Henry Ford.

Outcomes

A student:

- 5.2.1 evaluates and explains the impact of past, current and emerging technologies on the individual, society and environments.
- 5.3.1 analyses the work and responsibilities of designers and the factors affecting their work
- 5.3.2 evaluates designed solutions that consider preferred futures, the principles of appropriate technology and ethical and responsible design.

Description of activity

Based on the research, role-play and class discussion, students write an *exposition* from the perspective of Henry Ford considering the question: ‘If you knew then what you know today about the impact of automobiles on society, would you put in all the money that you did to make the innovation a viable one?’ The suggested duration of this activity is 2–3 lessons (80 minutes).

Criteria for assessing learning

(These criteria would normally be communicated to students with the activity)

Students will be assessed on their ability to:

- develop an exposition which forcefully persuades using logical arguments and justified choices
- demonstrate an understanding of how designers consider ethical issues and future trends
- explain and evaluate the impact of the design of the automobile has had on the individual, society and environments.

Guidelines for marking

The following guidelines for marking show one approach to assigning a value to a student's work. Other approaches may be used that better suit the reporting process of the school. Categories, marks, grades, visual representations or individual comments/notations may all be useful.

Range	A student in this range:
A (8–10)	<ul style="list-style-type: none">• uses extensive argument and justifies choices supporting one side of the issue• critically evaluates and coherently explains the impact of the automobile on the individual, society and environments• demonstrates a critical awareness and comprehensive understanding of how designers respond to ethical issues and future trends
B (4–7)	<ul style="list-style-type: none">• uses sound argument and partly justifies choices supporting one side of the issue• evaluates and explains the impact of the automobile on the individual, society and environments• demonstrates an awareness and sound understanding of how designers respond to ethical issues and future trends
C (1–3)	<ul style="list-style-type: none">• uses basic argument persuading one side of the issue• describes the impact of the automobile on the individual, society and environments.• demonstrates a limited understanding of how designers respond to ethical issues and future trends.

Feedback

The teacher will provide written feedback to students. Comments will inform them about such things as:

- the strength of the argument to justify choices
- their ability to explain the impact of the automobile on the individual, society and environments
- their understanding of how designers consider ethical issues and future trends.

Future directions

Through this activity students have developed knowledge and understanding of the automobile as an innovation and its impact on the individual, society and environments. This learning can be applied in further units and activities through their experiences in researching and accessing information, collaboration, their understanding of the work of designers and the impact of their work on individuals, society and environments.

Resources

Lead-up activities for the exposition on Henry Ford.

5.3 Sample Unit 3: On the Web

<p>Unit description: We are living in a global community where sharing information and working collaboratively are becoming increasingly important. The World Wide Web is the total set of interlinked webpages which use highlighted text, images and sometimes sounds, videos, games etc, and which are stored on web servers around the world. This unit midway through Stage 5 focuses on developing knowledge and understanding of and skills in using the World Wide Web. Students will develop and extend their skills through the manipulation of ICT to design, produce and evaluate a website for a student-identified need or opportunity.</p>	<p>Outcomes A student:</p> <ul style="list-style-type: none"> 5.1.2 applies and justifies an appropriate process of design when developing design ideas and solutions 5.2.1 evaluates and explains the impact of past, current and emerging technologies on the individual, society and environments 5.3.1 analyses the work and responsibilities of designers and the factors affecting their work 5.3.2 evaluates designed solutions that consider preferred futures, the principles of appropriate technology and ethical and responsible design 5.5.1 uses appropriate techniques when communicating design ideas and solutions to a range of audiences 5.6.1 selects and applies management strategies when developing design solutions
<p>Area of Study: Promotional design Design project: Webpage design</p>	
<p>Length of unit: 20 weeks</p>	
<p>Resources: Access to a range of computer hardware such as scanners, digital cameras and software such as word processing programs, internet browsers, webpage authoring tutorials and software, graphics software. Websites such as: as www.yahoo.com.uk; www.citv.co.uk; www.nasa.gov; www.webgenies.co.uk; www.siec.k12.in.us</p>	

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Innovation <ul style="list-style-type: none"> types of innovation Trends in technology and design <ul style="list-style-type: none"> in history across contemporary cultures 	<ul style="list-style-type: none"> identify a variety of past, current and emerging technologies and innovations across a range of focus areas recognise trends of designed solutions in history and across contemporary cultures identify ICT applications used by designers and the impact on their work 	Teacher <ul style="list-style-type: none"> describes how the internet works, the World Wide Web, websites and webpages, and the importance of web browsers identifies what is a network and how they pass information Class <ul style="list-style-type: none"> discusses links, text, images, sounds which are important for entertainment and education views a web site, and observes and notes the use of pictures, photographs, links, animations, sounds and games discusses and documents why different sites are created for different purposes and how the design may differ Students <ul style="list-style-type: none"> use a browser such as Microsoft Internet Explorer, Netscape Navigator. investigate what .org and .com mean and which countries web addresses have the suffix .nz and .au make up their own web address 	<p>Oral responses and discussion demonstrate students' initial understanding of the World Wide Web</p> <p>Students' use of the internet indicates their level of skill in using ICT</p> <p>Completed investigations demonstrate their knowledge of the use of the World Wide Web</p>	<p>Teacher gives oral feedback during discussion</p> <p>Teacher gives oral feedback while students are using the internet</p> <p>Teacher gives oral feedback on student investigations</p>
Creativity and problem-solving techniques used by designers <ul style="list-style-type: none"> needs and opportunity analysis (SWOT – strengths, weaknesses, opportunities and threats) 	<ul style="list-style-type: none"> identify creativity and problem-solving techniques used by designers in their work 	Students <ul style="list-style-type: none"> view websites such as www.yahoo.com.uk; www.citv.co.uk; www.nasa.gov and record the answers to such questions as: 'Which site downloaded the quickest?' 'Which entertained you the most and why?' 'Which gave you the most information?' 'What were the good features of the site?' Describe the picture quality and size for download speed and functionality, text size and style for readability and position, and colour for visuals and overall scheme develop a SWOT analysis on one website discuss and document what makes a good website and what the guidelines might be for good design that all sites should follow 	<p>Students' use of the internet and evaluation of websites demonstrate their knowledge and understanding of features of websites</p>	<p>Teacher provides observation during web searching and gives oral feedback during discussion on the guidelines for good design of a website</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Impact of technologies on <ul style="list-style-type: none"> the individual society (different cultural groups, including Aboriginal and Torres Strait islanders and other Indigenous peoples) environments 	<ul style="list-style-type: none"> evaluate and explain the impact of past, current and emerging technologies on the individual, society and environments 	Class <ul style="list-style-type: none"> discusses the ‘Information rich’ and the ‘Information poor’ and questions such as: ‘How do you think people who can’t afford their own computers at home should get access to the web?’ ‘Why is it important for everyone to be able to do this?’ Students <ul style="list-style-type: none"> word process a short newspaper article reporting on the ‘Information rich’ and the ‘Information poor’ that highlights the impact of current and emerging technologies on the individual, society and environments 	<p>Newspaper report that students have word processed shows their level of understanding of the impact of current and emerging technologies on the individual in society and their use of ICT</p>	<p>Teacher gives written feedback on newspaper report</p>
Realisation of design ideas using technologies including <ul style="list-style-type: none"> tools and equipment materials techniques 	<ul style="list-style-type: none"> identify a range of tools and equipment, materials and techniques, and calculate requirements for each design project select and use tools and equipment when designing and producing each project select and use a variety of appropriate techniques when designing and producing each project 	Teacher <ul style="list-style-type: none"> explains how webpages are constructed and the computer language (HTML) that is used to write webpages Students <ul style="list-style-type: none"> view webpage source code files using a common ‘view source code’ feature of a browser and identify key features of coding including tags and rules discuss the benefits of creating websites using a HTML editor, or webpage authoring application (web editor) 	<p>Student identification and discussion of the construction of webpages reveal their knowledge of the use of technologies when realising design ideas</p>	<p>Teacher observation and oral feedback during review of webpage construction</p>
Creative and innovative idea-generation using <ul style="list-style-type: none"> brainstorming concept sketches and maps modelling interaction of hand and mind observation research collaboration 	<ul style="list-style-type: none"> use ideas generation techniques when developing creative design ideas 	Students <ul style="list-style-type: none"> brainstorm in pairs ideas on what the site is going to be about identify and record the purpose of the site, who the site is targeted for and how big the site will be 	<p>Student brainstorming indicates their ability to work with others to generate design ideas</p>	<p>Teacher observation and oral feedback during brainstorming and pair work</p>

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Research and exploration <ul style="list-style-type: none"> access information and data 	<ul style="list-style-type: none"> identify and summarise information from a range of sources for the design project 	Students <ul style="list-style-type: none"> research the identified content area for the site using a range of sources and document the information that will be included 	Information documented by students indicates their ability to identify appropriate content when accessing and researching	Teacher gives oral feedback during research
Communication and presentation techniques <ul style="list-style-type: none"> visual graphical written oral digital 	<ul style="list-style-type: none"> apply appropriate communication techniques when documenting and presenting design ideas and solutions use ICT applications such as computer-generated graphics, word processing and desktop publishing for presentation of documentation 	Students <ul style="list-style-type: none"> view websites and discuss how visual presentation plays an important role in a successful website, and consider size and colour of the graphics, background colour or image, and font colour and size document learning and report on a range of examples of visual presentation methods used in websites in the design folio 	Students' report on visual presentation of websites in folio demonstrates their knowledge and understanding of techniques used to present design ideas and solutions	Teacher gives written feedback on visual presentation report
Experimentation <ul style="list-style-type: none"> testing and experimenting 	<ul style="list-style-type: none"> assess the suitability of design ideas by testing and experimenting refine ideas to address needs and opportunities 	Teacher <ul style="list-style-type: none"> introduces the concept of simplifying images and animations by optimising the file size and saving them as GIFs and JPEGs Students <ul style="list-style-type: none"> investigate the various file types and compare file type to picture quality experiment to simplify images and animations and document in the design folio 	Student experimentation with images for websites shows their ability to use testing to assess and refine design ideas	Teacher observation of experimentation and oral feedback
Evaluating <ul style="list-style-type: none"> criteria for success evaluation techniques 	<ul style="list-style-type: none"> document and evaluate decisions made throughout the design process using specified criteria for success 	Students <ul style="list-style-type: none"> discuss the effect the audience has on the design and content of the website and consider the complexity of information and the number and size of the pages for each site view a variety of different sites and comment on features used for different audiences such as children and adults create a web evaluation table that includes design, content, and function factors and criteria. 	Class discussion indicates student understanding of the impact of website design on the audience. The web evaluation table demonstrates students' ability to evaluate and document decisions made during the design of a website	Teacher gives oral feedback during discussion Written feedback on evaluation table

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Communication and presentation techniques <ul style="list-style-type: none"> visual graphical written oral digital Management <ul style="list-style-type: none"> project management strategies when implementing and evaluating a process of design 	<ul style="list-style-type: none"> outline a range of techniques appropriate to various audiences apply appropriate communication techniques when documenting and presenting design ideas and solutions prepare and implement time and action plans in design projects evaluate the role of project management when developing the design project 	Students <ul style="list-style-type: none"> develop a flow chart, Gantt chart and development list as methods of communicating project planning for their website compare the strengths and weaknesses of each project planning method justify the selection of the most appropriate method for the management of the project [for activity details see p 45] 	The developed flow chart, Gantt chart and development list demonstrate students' knowledge and understanding of communication techniques and of project management strategies used in a process of design	Teacher gives written feedback on the project-planning methods for a website
Communication and presentation techniques <ul style="list-style-type: none"> visual graphical written oral digital 	<ul style="list-style-type: none"> apply appropriate communication techniques when documenting and presenting design ideas and solutions 	Students <ul style="list-style-type: none"> identify the Home page and give a brief description of what the site is about, the links they could use, as well as the text, pictures and colour schemes, establishing the credibility and overall navigation of the site develop storyboards for each page and integrate them into the layout of the flow chart 	Student use of storyboards demonstrates their skill in communicating design ideas	Teacher gives oral feedback on storyboards
Realisation of design ideas using technologies <ul style="list-style-type: none"> tools and equipment materials techniques 	<ul style="list-style-type: none"> identify a range of tools and equipment, materials and techniques, and calculate requirements for each design project select and use tools and equipment when designing and producing each project 	Teacher <ul style="list-style-type: none"> demonstrates the use of web authoring tutorials Students <ul style="list-style-type: none"> use a HTML editor or web authoring tool and develop skills in setting up the site (file location); text, colour and image features; tables; cells; link and linking; hotspots; animation; troubleshooting; uploading refine the solution by using the 'preview in browser' feature of web or HTML editing applications 	Students' website design and construction demonstrates their understanding and skill when realising design ideas using technologies	Teacher gives oral and written feedback on website design and construction using technologies

Students learn about:	Students learn to:	Integrated learning experiences, instruction and assessment:	Evidence of learning:	Feedback:
Experimentation <ul style="list-style-type: none"> testing and experimenting Evaluation <ul style="list-style-type: none"> evaluation techniques 	<ul style="list-style-type: none"> assess the suitability of design ideas by testing and experimenting refine design ideas to address needs and opportunities self assess and peer-assess designed solutions 	Students <ul style="list-style-type: none"> test the solution in real-time and modify and trouble shoot as necessary change or modify aspects of the website as they preview and consider the overall design including navigability, interactivity, and page format, appropriateness of content (including correct information), and technical elements such as download speed and links view the website and evaluate according to the identified criteria for success 	<p>As students refine and modify design ideas they indicate their ability to use testing to assess the suitability of design ideas</p> <p>Student website design demonstrates their skill in realising design ideas to produce and evaluate a design solution</p>	<p>Teacher gives oral feedback as students test and experiment</p> <p>Teacher and peer assessment of website design</p>

5.3.1 Sample assessment for learning activity: Planning a Website

Context

This activity forms part of a unit of work midway through Stage 5 where students are required to design and develop a web site about a community, social or global issue of relevance to them. This activity is designed to develop skills in project management such as preparing plans when developing design solutions and documenting project work. They are familiar with the steps of the design process from previous units of work.

Outcomes

A student:

- 5.1.2 applies and justifies an appropriate process of design when developing design ideas and solution
- 5.5.1 uses appropriate techniques when communicating design ideas and solutions to a range of audiences
- 5.6.1 selects and applies management strategies when developing design solutions.

Description of activity

Students are required to develop a flow chart, Gantt chart and development list as methods of communicating project planning for their website.

They compare the strengths and weaknesses of each method and justify the selection of the most appropriate method for the management of the project. The suggested duration for this assessment for learning activity is 3–4 lessons (160 minutes).

Criteria for assessing learning

(These criteria would normally be communicated to students with the activity)

Students will be assessed on their ability to:

- develop and communicate project planning methods using a flow chart, Gantt chart and development list
- compare the strengths and weaknesses of each planning method
- justify the selection of the most appropriate planning method for the management of the web site design.

Guidelines for marking

The following guidelines for marking show one approach to assigning a value to a student's work. Other approaches may be used that better suit the reporting process of the school. Categories, marks, grades, visual representations or individual comments/notations may all be useful.

Range	A student in this range
9–12 (High)	<ul style="list-style-type: none">• develops and communicates for each planning method a detailed and accurate plan that contains all of the relevant information and is sequenced logically• explains clearly the similarities or differences between each planning method• presents a strongly supported argument to justify the selection of the most appropriate method
5–8 (Satisfactory)	<ul style="list-style-type: none">• develops and communicates for each planning method a clear plan that contains most of the relevant information and shows some logic in its sequence• describes the similarities or differences between each planning method• presents an argument to justify the selection of the most appropriate method
1–4 (Progressing)	<ul style="list-style-type: none">• develops and communicates, for at least two planning methods, plans that contain some relevant information and are limited in detail and accuracy• identifies the similarities or differences between each planning method• uses a limited argument to justify the selection of the most appropriate method.

Feedback

The teacher will provide written feedback to students. Comments will inform them about such things as:

- their ability to develop and communicate project planning tools including flow charts, Gantt charts and development lists
- identifying the strengths and weaknesses of project planning tools to select the most appropriate management plan to develop design solutions
- justifying a decision as part of the design process.

Future Directions

Through this activity students have developed skill in planning and communicating project planning methods. Evidence collected through this activity could serve to inform teachers of student mastery of the development and communication of flow charts, Gantt charts and development lists. For those areas of weakness identified, further supplementary activities would be provided. The learning from this activity can be further applied when managing design activities later in this unit of work and in subsequent units.