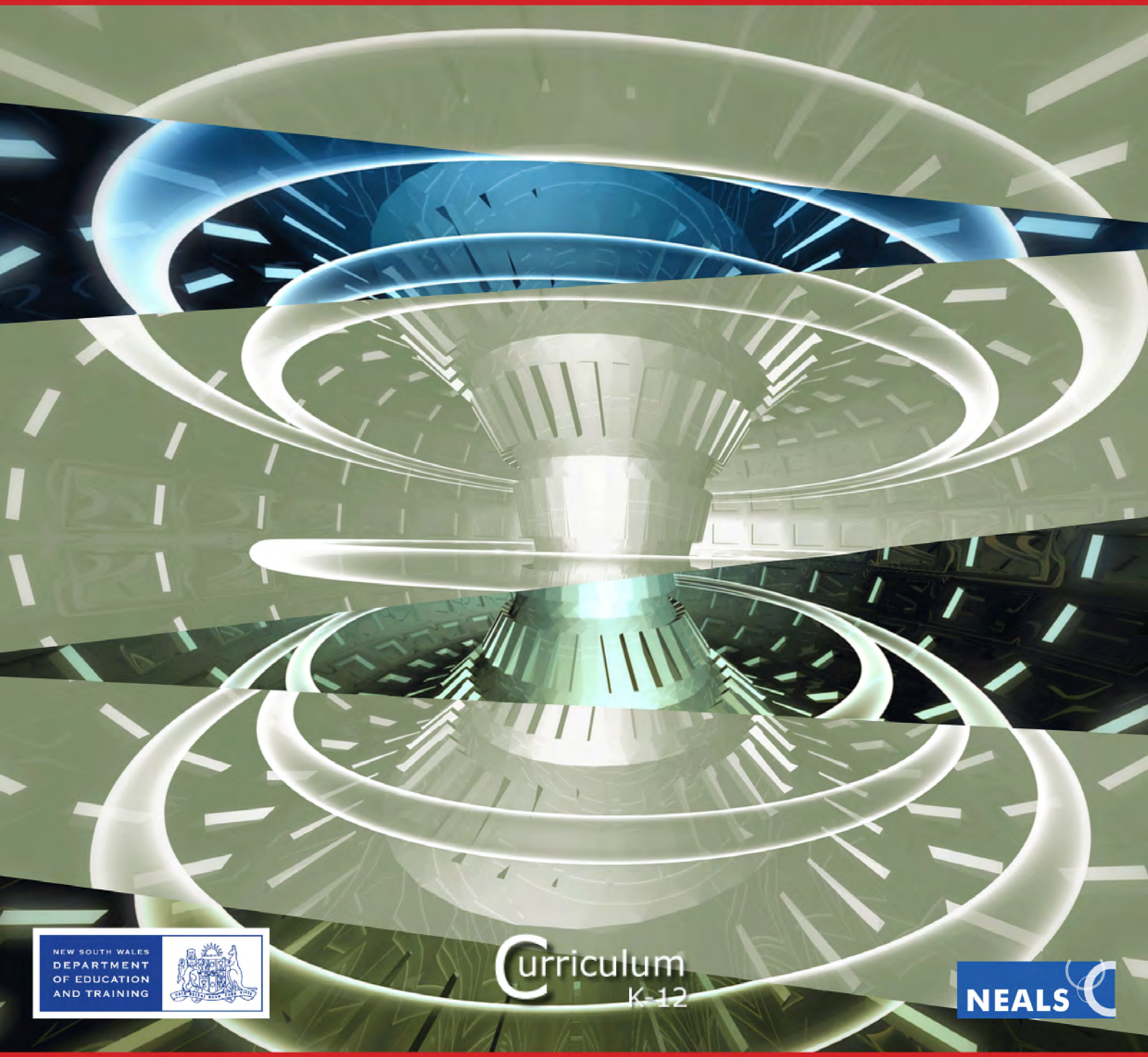
Stage 6

Industrial Technology syllabus support

Resource booklet



NEW SOUTH WALES DEPARTMENT OF EDUCATION AND TRAINING

Curriculum K–12

NEALS

<www.curriculumsupport.education.nsw.gov.au>

Technology Unit

Acknowledgements

The Technology Unit of the Curriculum K–12 Directorate has developed professional learning workshops for secondary technology teachers in NSW public schools to provide practical strategies and resources to support teachers of Industrial Technology.

Materials developed by:

Mark Tyler	Head Teacher Industrial Arts, Pennant Hills High School
Lyndall Foster	Technology Unit, Curriculum K–12 Directorate
Julie King	Technology Unit, Curriculum K–12 Directorate
Dan Rytmeister	Head Teacher Industrial Arts, Marrickville High School

The following people contributed to the consultation and development process of these materials:

Theo Docos	Matraville Sports High School
Richard Doel-Mackaway	Centre for Learning Innovation
Tim Gorrod	Centre for Learning Innovation
Marisa Johnston	Fairfield High School
Ian McKenzie	Greystanes High School
David Macpherson	Hoxton Park High School
Astrid Perdriau	St Ives High School
John Reardon	Cheltenham Girls High School
David Smith	Bateman's Bay High School
Peter Thompson	Bossley Park High School
Greg Wright	Epping Boys' High School

For more information contact:

Julie King

R/Manager Technology

julie.king@det.nsw.edu.au

Contents

Links

Syllabus, support document, specifications, links to examination notes.
http://www.boardofstudies.nsw.edu.au/syllabus_hsc/syllabus2000_listi.php#industrialtechnology

Curriculum support
http://www.curriculumsupport.education.nsw.gov.au
Click on *Years 7-12* → *Technology*

Industrial Technology electronic content allocation tool
http://www.curriculumsupport.education.nsw.gov.au/secondary/technology/11_12/industrial/index.htm

Tale
http://www.tale.edu.au/tale/

NSW Department of Education and Training's curriculum planning policy
https://www.det.nsw.edu.au/policies/curriculum/schools/curric_plan/PD20050290.shtml

Contacts

Julie King R/Manager, Technology unit 9886 7163
julie.king@det.nsw.edu.au
Melinda Waddell R/Senior Curriculum Advisor 9886 7542
MELINDA.WADDELL1@det.nsw.edu.au
Dan Rytmeister R/Project Officer 9886 7542
Dan.Rytmeister@det.nsw.edu.au

Excerpt from Revised Stage 6 Industrial Technology Syllabus

Summary of Amendments

The syllabus amendments:

- make the document more user-friendly with increased clarity regarding the depth of study
- provide content that reflects depth of study across the focus areas
- provide a clearer distinction between content in the Preliminary course and HSC course
- formalise the provision of skills and techniques required in the Preliminary course for later use in the preparation and completion of the Major Project and accompanying Design and Management folio in the HSC course
- include a study of the history of technology in each of the focus area technologies
- include a study of new and emerging technology in the focus area
- contain revised HSC examination specifications including separate written 40 mark examinations for each of the six focus areas as well as the 60 mark Major Project. These written examinations will contain a variety of question types including objective-response, short answer and extended response questions.

This document is available on the Board of Studies website:
http://www.boardofstudies.nsw.edu.au/syllabus_hsc/industrial-technology.html

Excerpt from Revised Stage 6 Industrial Technology Syllabus

HSC External Examination Specifications Industrial Technology Stage 6

The examination will consist of a written paper worth 40% and a Major Project worth 60%.

Written Paper (40 marks)

Time allowed: 1 hour and 30 minutes (plus 5 minutes reading time)

There will be a separate written paper for each of the SIX Industry Focus Areas.

The written paper will consist of THREE sections: Section I, Section II and Section III.

Section I (10 marks)

There will be objective response questions to the value of 10 marks.

Questions will be based on the Industry Related Manufacturing Technology section of syllabus and will be specific to the focus area studied.

Section II (15 marks)

There will be short-answer questions.

The questions in this section will be specific to the focus area studied.

Section III (15 marks)

There will be an extended response question.

The question will be based on the Industry Study section of the syllabus.

This question will be common to all SIX written examination papers.

This document is available on the Board of Studies website:

http://www.boardofstudies.nsw.edu.au/syllabus_hsc/syllabus2000_listi.html

Electronic Content Allocation Tool (ECAT)

What ECAT is and does

It is an Excel spreadsheet. It can be used as *either*

- a way of checking that your existing course plan (or program) addresses the content (dot points, *learn tos*, *learn abouts*) from the syllabus

or

- a way of ensuring that a course plan in the process of development covers the content in an even way *as it is written*.

This tool cannot produce a unit of work, course plan or program. It cannot think of strategies or activities. It was never intended to do this.

Provides a somewhat less tedious way (compared to doing it manually) to cross check content from the course plan and the syllabus. It makes it obvious if there is content left out. It also makes the user aware if content is often revisited.

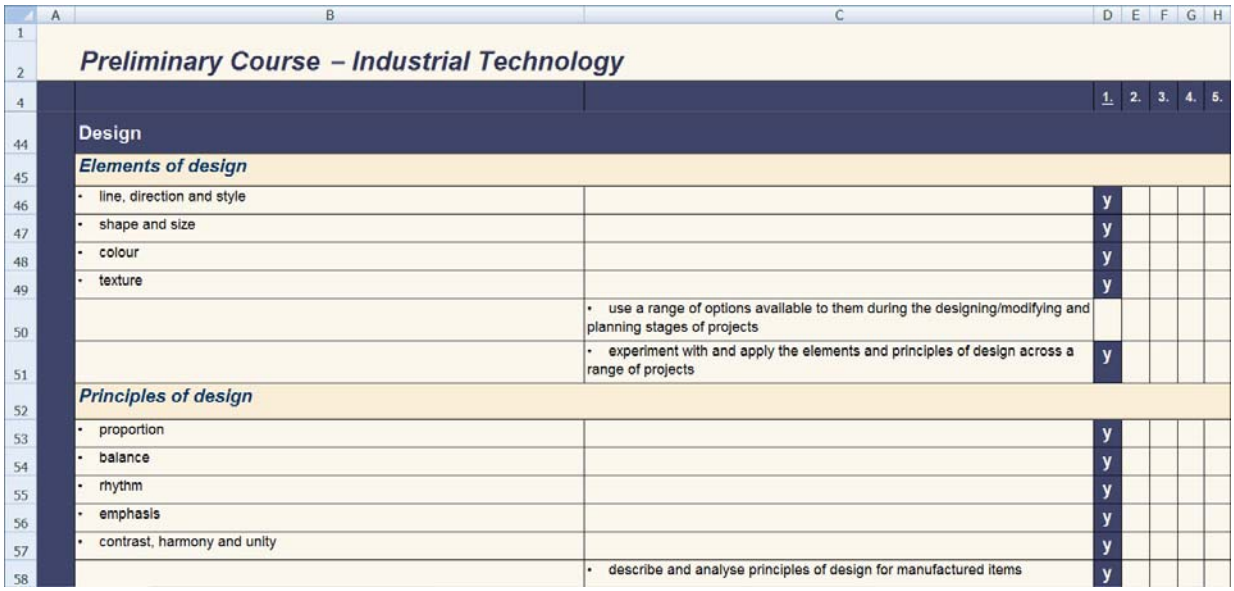
If the course plan or the program is already written, the user would work through the program, entering content in the ECAT. If the plan or program is being developed, the user would work through the ECAT, thinking of strategies and activities.

Instructions

There is an ECAT for the Preliminary course and one for the HSC course. Both spreadsheets work in much the same way. Screen shots are from the Preliminary course.

Open the file and save it immediately using a different name to be sure you are working with a copy, not the original.

When the document opens, you will see the screen below. As you scroll down you will see that the *learn abouts* and *learn tos* from the entire course are listed. Where you find content in the unit of work that matches with the syllabus, fill in a 'Y' in the row matching the syllabus content and in the column matching the unit.

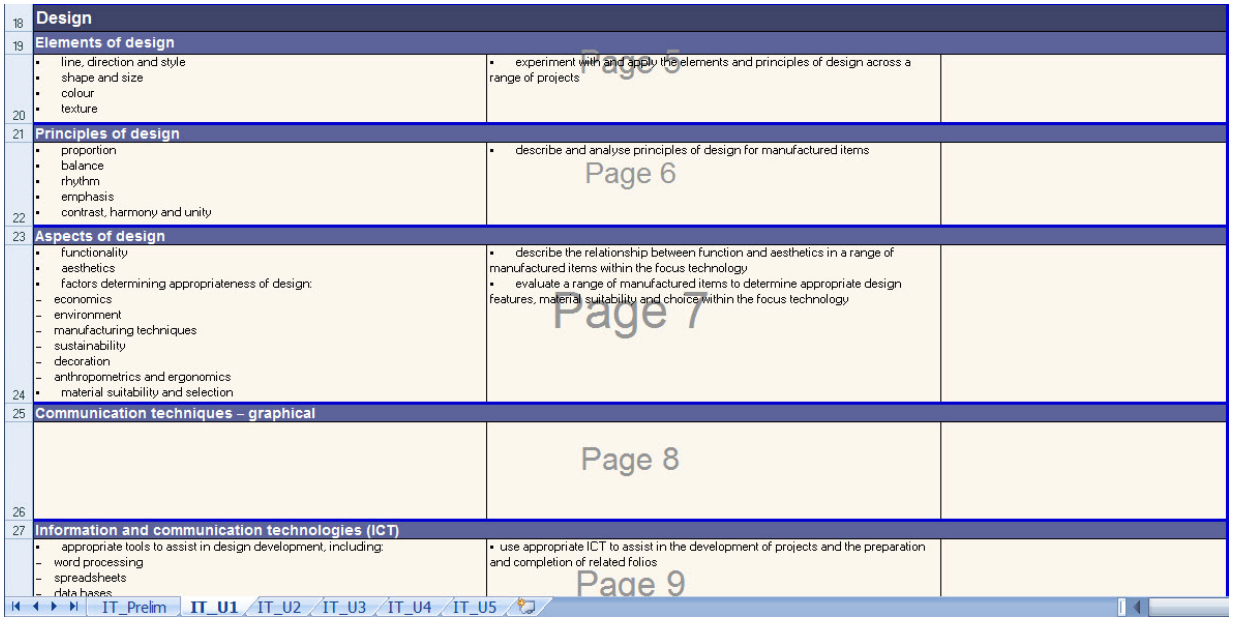


			1.	2.	3.	4.	5.
Design							
Elements of design							
• line, direction and style		y					
• shape and size		y					
• colour		y					
• texture		y					
	• use a range of options available to them during the designing/modifying and planning stages of projects						
	• experiment with and apply the elements and principles of design across a range of projects	y					
Principles of design							
• proportion		y					
• balance		y					
• rhythm		y					
• emphasis		y					
• contrast, harmony and unity		y					
	• describe and analyse principles of design for manufactured items	y					

In the example above, a 'y' has been entered in eleven cells. This means that in unit 1, all *learn abouts* have been covered for elements of design and principles of design but only two of the three *learn tos.*

Now select the unit you want to work on from the bottom bar. Save the spreadsheet.

Note that content from the syllabus has been copied to this sheet wherever a 'y' was entered on the previous sheet.



Design			
Elements of design			
• line, direction and style • shape and size • colour • texture	• experiment with and apply the elements and principles of design across a range of projects		
Principles of design			
• proportion • balance • rhythm • emphasis • contrast, harmony and unity	• describe and analyse principles of design for manufactured items		
Aspects of design			
• functionality • aesthetics • factors determining appropriateness of design: – economics – environment – manufacturing techniques – sustainability – decoration – anthropometrics and ergonomics • material suitability and selection	• describe the relationship between function and aesthetics in a range of manufactured items within the focus technology • evaluate a range of manufactured items to determine appropriate design features, material suitability and choice within the focus technology		
Communication techniques – graphical			
Information and communication technologies (ICT)			
• appropriate tools to assist in design development, including: – word processing – spreadsheets – data bases	• use appropriate ICT to assist in the development of projects and the preparation and completion of related folios		

Enter the unit name, class, time frame, teacher and room.

Adjust the height of appropriate cells so that all data can be seen.

You can enter notes that may be useful to you in the programming process.

You can also transfer the syllabus content and comments to a teaching and learning sequence by copying and pasting.

Before you print the document, ensure that the correct print area is set. This may save you accidentally printing pages of empty cells. The simplest way to do this is to adjust the page breaks

Check on *Print Preview* which pages you need to print.

Sample Electronic Content Allocation Tool – printout page

Preliminary Course: Unit 1

UNIT NAME	Type unit name here	TEACHER	Type teacher name here
CLASS	Type class name here		
TIME FRAME	Type the time frame here	ROOM	Type your room here

Students learn about	Students learn to	NOTES
Design		
Elements of design		
• line, direction and style • shape and size • colour • texture	• experiment with and apply the elements and principles of design across a range of projects	
Principles of design		
• proportion • balance • rhythm • emphasis • contrast, harmony and unity	• describe and analyse principles of design for manufactured items	
Aspects of design		
• functionality • aesthetics • factors determining appropriateness of design: – economics – environment – manufacturing techniques – sustainability – decoration – anthropometrics and ergonomics • material suitability and selection	• describe the relationship between function and aesthetics in a range of manufactured items within the focus technology • evaluate a range of manufactured items to determine appropriate design features, material suitability and choice within the focus technology	
Communication techniques – graphical		
Information and communication technologies (ICT)		
• appropriate tools to assist in design development, including: – word processing – spreadsheets – data bases – presentation – page layout – computer-aided design (CAD)	• use appropriate ICT to assist in the development of projects and the preparation and completion of related folios	

Sample Unit of Work for Preliminary Course: Jewellery Box and Folio

This extract from the Timber Products and Furniture Technologies (Preliminary) unit of work that can be found on the Curriculum Support website: http://www.curriculumsupport.education.nsw.gov.au/secondary/technology/11_12/industrial/index.htm

Designing and planning practical projects through the completion of associated management folios	• use a range of options available to them during the designing/modifying and planning stages of projects	P5.2	Task 1: Jewellery Box and Folio Due: Early Term 2. Weighting: 25%. Outline/expectations. Discuss task requirements, project work and documentation. Show students the range of communication methods used in project management folios. Discuss presentation options.	Handout. Sample folio(s). Folio guideline (handout).	
Information and communication technologies (ICT) • appropriate tools to assist in design development, including: – word processing – spreadsheets – data bases – presentation – page layout – computer-aided design (CAD)	• use appropriate ICT to assist in the development of projects and the preparation and completion of related folios	P5.1	Use sample folio(s) to highlight the appropriate use of ICT in compiling a folio and to communicate high expectations. Students must develop, store and manipulate folio presentations electronically. A hard copy must be presented for marking with the completed project. Additional ICT may support the project presentation.	Sample folio(s) Folio guideline (handout)	
		P2.2	Using the existing knowledge/ prior learning of the class group, brainstorm the common features of jewellery boxes.	Black/whiteboard Chalk/markers	

		P5.2	Begin folio work as a class – writing the Statement of Intent. This is to be a scaffolded task where the teacher leads the completion of the statement offering only few choices for variation at this stage, e.g. I/ My mum/ My Dad/ My Girlfriend/ My Boyfriend will use the completed item. It will have one/ a number of compartments.	Black/ whiteboard Chalk/ markers	
Elements of design • line, direction and style • shape and size • colour • texture	• experiment with and apply the elements and principles of design across a range of projects	P3.3	Watch DVD: Elements and Principles of Design. Discuss and complete worksheets. Students then study elements of design through textbook reading and class discussion. Students are to apply their understanding of design through the generation of Initial Ideas/ possibilities by sketches. Demonstrating sketching techniques for communicating ideas.	TV, DVD Woodworking, Part One, Chapter 2	
Principles of design proportion balance rhythm emphasis contrast, harmony and unity	describe and analyse principles of design for manufactured items	P3.2	Students continue to develop design understanding through textbook reading and class discussion. Students collect at least ten different pictures (colour) of jewellery boxes to begin the Research section of the folio. Design features are evaluated and recorded in the folio as Plus, Minus, and Interesting. (PMI)	Woodworking, Part One, Chapter 2 Internet, magazines, books	
Aspects of design • functionality • aesthetics	• describe the relationship between function and aesthetics in a range of manufactured items within the focus technology	P6.1	Students learn more about aspects of design through textbook reading and class discussion. Discuss factors influencing design. Good and bad design. Relate understanding to existing jewellery boxes. Students are to look at, hold, and manipulate a range of jewellery boxes in discussing the need for them to look good and to work well.	Woodworking, Part One, Chapter 2 At least five different jewellery boxes,	

• factors determining appropriateness of design: – economics – environment – manufacturing techniques – sustainability – decoration – anthropometrics and ergonomics • material suitability and selection	• evaluate a range of manufactured items to determine appropriate design features, material suitability and choice within the focus technology	P3.3 P4.3	Consideration should be given to an elegant look, suitable size/ proportion, decoration, the protection of items to be stored, and ease of access. Students learn more about design through textbook reading and class discussion. Learning is consolidated through completion of questions at the end of the chapter, individually or as a class. Watch DVD: Ergonomics and Design. Discuss. Students learn more about anthropometrics and ergonomics through textbook reading and class discussion. Discuss designing and planning for people: revisit research and note sizes of jewellery boxes and ease of access to compartments/ storage areas. Look closely again at the existing jewellery boxes. Identify materials used. Note solid timbers, manufactured boards, hardware/ allied materials, joints, finish and function. Discuss suitability and possibilities for students' individual projects.	made or bought. Woodworking, Part One, Chapter 2 Revision questions TV, DVD Woodworking, Part Two, Chapter 10 At least five different jewellery boxes, made or bought.	
Materials Timber and timber products structure: sapwood heartwood earlywood latewood cambium layer	describe the growth of trees and identify and recognise the various parts of a tree	P4.3	Students then study timber and timber products in detail through textbook reading and discussion. Watch DVD: Timber: Production and Processing Part A (VEA) Discuss.	Woodworking, Part One, Chapter13 TV, DVD Tree, cut log, posters, textbooks.	

growth ring pith xylem and phloem bark photosynthesis			Students are quizzed by the teacher to enable them to demonstrate an understanding of the growth of trees. Students identify/ label parts of a tree through looking at real trees, logs, planks, posters/ textbooks.		
properties and characteristics of hardwoods or softwoods: figure grain direction texture colour strength durability weight hardness weathering	identify the properties of hardwoods and softwoods and apply them to practical projects discuss the properties of hardwoods and softwoods and apply them to practical projects	P4.3	Watch DVD: Wood Properties and Uses. Discuss. Students study properties and characteristics of hardwoods and softwoods through textbook reading and discussion. Provide samples of timbers available to students for the completion of the jewellery box. Students research and note properties and features in their folios. As ongoing evaluation of their research, students then discuss suitability of the available timbers for use in their projects according to their individual properties.	TV, DVD Woodworking, Part One, Chapter13 Timber samples	
timber industry terms relating to: grade sizes: timber boards manufactured boards	discuss and use timber industry terms in relation to timber sizes and selection identify the range of sizes of timber boards and manufactured boards and make economical use of them in practical projects	P4.3	Students study the measuring and marketing of timber through textbook reading and discussion. Students identify timber industry terms relating to grade and size of manufactured boards through textbook reading and discussion. Students note the common sizes of materials available to them in their research section of the folio.	Woodworking, Part One, Chapter13 Woodworking, Part One, Chapter12	

			Students design their projects with regard to the common sizes of timber/ timber products available to minimize time and material waste.		
timber defects splits checks warping shakes bowing knots twists and winds		P6.2	Students study timber defects through textbook reading and discussion. Students note desirable features of timber to be selected for their own projects in their folios.	Woodworking, Part One, Chapter13	
manufactured boards, their manufacture, properties and use plywoods medium density fibreboards (MDF) particle boards	apply the properties of manufactured boards and use them in practical projects describe the range of manufactured boards available	P4.3	Watch DVD: Engineered Wood Products. Discuss. Students study manufactured boards, their manufacture, properties and use through textbook reading and discussion. Students note the properties of manufactured boards and may plan to use them in their project. Students document in their folios the range of manufactured boards as options to be used in the projects.	TV, DVD Woodworking, Part One, Chapter12	
Fittings and allied materials • hardware – screws – nails – nuts – bolts – knockdown fittings – hinges – handles			Watch DVD: Fasteners for Cabinet Making. Discuss. Students study fittings and allied materials through textbook reading and discussion.	TV, DVD Furnishing textbook Furnishing Workbook 1 Woodworking, Part One, Chapter 7	

– knobs – staples/staple guns • other materials – composite materials – glass – metal – polymers – upholstery materials • adhesives	• identify and select appropriate fittings and allied materials to use in practical projects	P4.3 P3.2	Students consolidate learning through the completion of workbook exercises. Students study adhesives through textbook reading and discussion. Students return to the completed jewellery boxes and identify appropriate fittings and allied materials to use in their own projects. Students should note their ideas/intentions in their folios as ongoing evaluation of their research. Students may be interested in particular handles, hinges or catch types, stays, decorative corners, glass or mirrors, sponge/ fabric or leathers. Students are required to research/find suppliers of these fittings and allied materials. Results in the form of pictures, prices and availability are to be documented in the folio.	At least five different jewellery boxes, made or bought. Supplier catalogues, websites, stores, hardware	
Processes, tools and machinery Processes planning sketches working drawings materials lists calculations costing	use a broad range of processes through a variety of practical projects	P3.1	Students are to study planning processes through textbook reading, discussion and analysis of previous folios. Students are to refine initial ideas, using research to work towards finalising the overall dimensions of their projects. Sketching, and making basic calculations to estimate costs.	Woodworking, Part One , Chapter 3 Sample folio(s).	

Resources

Web sites

Curriculum Support

www.curriculumsupport.education.nsw.gov.au/secondary/technology/index.htm

The Curriculum Support web site has been designed to support teachers in public schools and is produced by the Technology Unit, Curriculum K-12 Directorate, NSW Department of Education and Training.

The site is organised into syllabus specific areas for Years 7–10 and Years 11–12 and aims to meet syllabus and learning area specific needs.

The professional learning section provides up-to-date information about the workshops presented by the Technology Unit. Proposed workshops for Semester 1 2009 are:

- Animals and agriculture teaching 7–12
- Quality assessment in technology subjects.

Industrial Technology

http://www.curriculumsupport.education.nsw.gov.au/secondary/technology/11_12/industrial/index.htm

The Industrial Technology page on Curriculum Support's web site contains links to resources, including the Electronic Content Allocation Tool, the Powerhouse Museum, and Board of Studies resources.

Board of Studies

http://www.boardofstudies.nsw.edu.au/syllabus_hsc/industrial-technology.html

The Board of Studies website has links to a range of syllabus documents.

Board bulletins and official notices can be accessed from the website or can be emailed to your address.

Accessing Board of Studies Bulletins

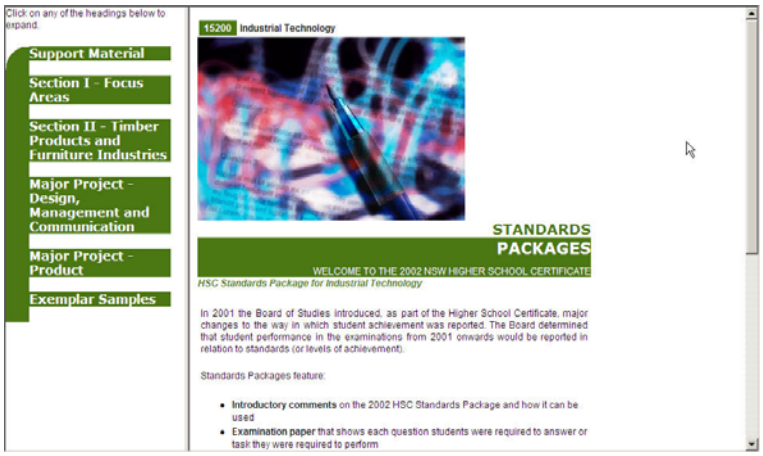
http://news.boardofstudies.nsw.edu.au/board-bulletins.cfm

Board bulletins and official notices can be accessed from the website or can be set to you by email or RSS.

RSS stands for Really Simple Syndication and provides a convenient way for you to receive content 'feeds' from a variety of sources straight to your desktop.

Standards Packages

http://arc.boardofstudies.nsw.edu.au/standards-packs/SP02_15200/



The 2001 and 2002 standards packages released on CD to all DET schools can also be accessed from the Board of Studies website.

Teaching and learning exchange (T@LE)

www.tale.edu.au

Tale is an education portal offering quality resources for teachers, parents and the community. When you use Tale you can be assured that all material is authoritative and relevant to learning in NSW schools and TAFE.

Centre for Learning Innovation (CLI)

www.cli.nsw.edu.au/cli

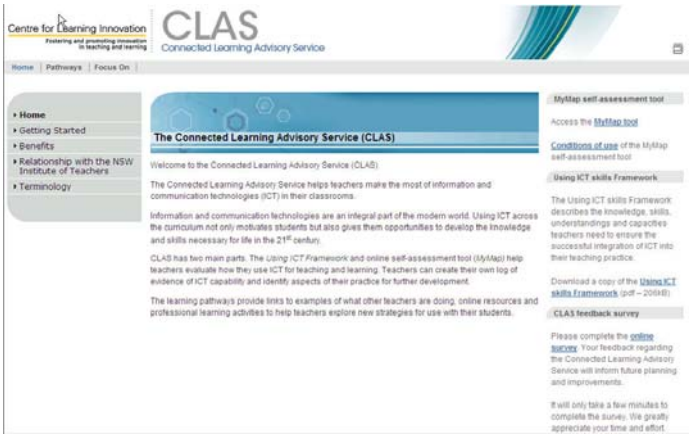
The Centre for Learning Innovation was established in 2004 and is part of the NSW Department of Education and Training. Its role is to provide excellence in learning resource production, and leadership in the strategic use of technology in education and training.

CLI develops learning resources across all contemporary media – including web, DVD, video, television and print. Learning design teams are complemented and supported by in-house media-production and information and communication technology (ICT) experts, and broadcast quality production facilities. All resources developed by CLI are available from the Tale web site: www.tale.edu.au

CLI Resources
Architectural Drawing
Design Essentials
Draw-it
e-talking
Product Illustration
Sketching Ideas
Soon to be released:
Digital Media
Tensile Testing
On the way:
Drawing IWBs – orthogonal, oblique, perspective
Storyboard IWBs – website navigation, web page design

Connected Learning Advisory Service (CLAS)

http://enterprisewin.det.nsw.edu.au/schoolsclas/clas/index.shtm



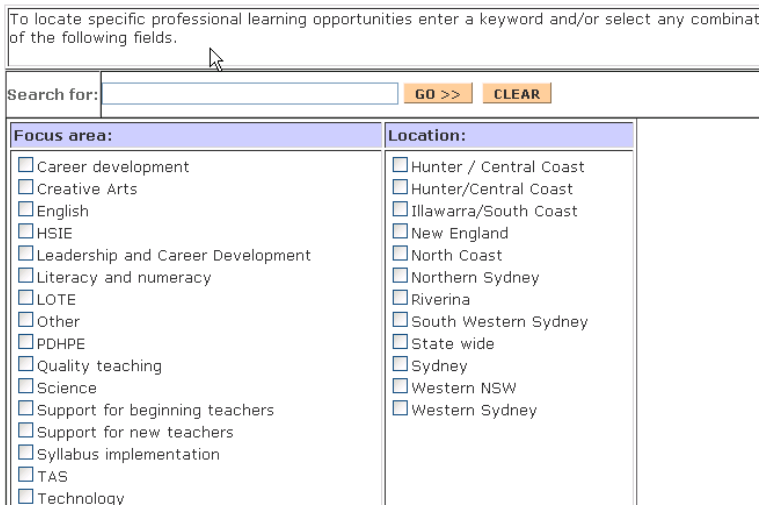
The Connected Learning Advisory Service helps teachers make the most of information and communication technologies (ICT) in their classrooms.

CLAS has two main parts. The *Using ICT Framework* and online self-assessment tool (*MyMap)* help teachers evaluate how they use ICT for teaching and learning.

Teachers can create their own log of evidence of ICT capability and identify aspects of their practice for further development The *learning pathways* provide links to examples of what other teachers are doing, online resources and professional learning activities to help teachers explore new strategies for use with their students.

Professional Learning Exchange (PLE)

www.schools.nsw.edu.au/plesearch/advanced.jsp



The Professional Learning Exchange (*PLE*) provides a ***search engine*** to help pinpoint the most suitable and cost-effective programs to meet professional learning needs.

Phase 1 is the current phase. It represents the pilot phase of the PLE. Here you will find professional learning opportunities offered by Regional Offices and State Office Directorates of the NSW Department of Education and Training.

Phase 2 will provide professional learning opportunities offered by TAFE and external providers including universities, professional teacher associations and through *Educator Network Australia* (EdNA) http://www.edna.edu.au/edna/page1.html)

HSC Online

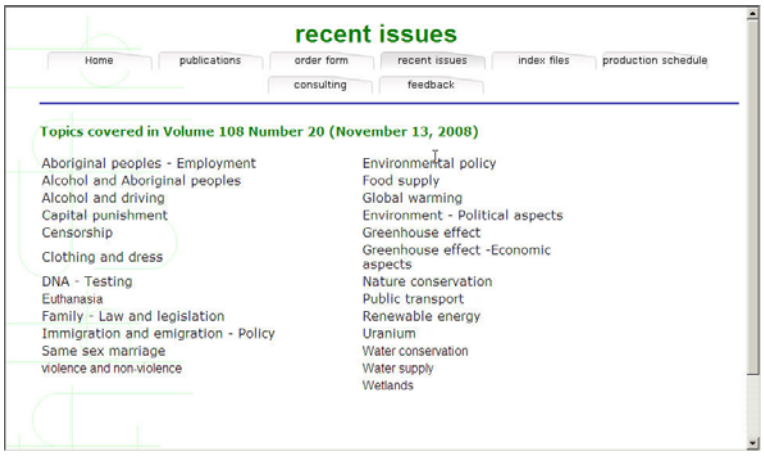
http://www.hsc.csu.edu.au/ind_tech/

HSC Online is an initiative of Charles Sturt University to support students across a wide range of HSC subjects.

The Industrial Technology sections contain syllabus content, activities and links to related websites.

Social and Environmental Issues

http://www.currentinformation.com.au/



The current information website has details to a subscription service for newspaper articles on the topics of *Current Social Issues* and *Current Environmental Issues.* Many school libraries already subscribe to this service and have printed issues on their shelves.

Australian Flexible Learning Framework

http://toolboxes.flexiblelearning.net.au

The Australian flexible Learning Framework produces a range of e-learning toolboxes for vocational education. This page is best used for searching for available resources which can then be downloaded from the repository, see below.

Australian Flexible Learning Framework

http://toolboxes.flexiblelearning.net.au/repository/index.htm

The search engine can be used to locate a range of resources.

Searching for Wall Unit will find five units of work and searching for Chair will find another three units of work.

Other resources

Institute of Industrial Arts and Technology Education (IIATE)

The institute releases its newsletter via CD and contains a range of resources relevant to the teaching of Industrial Technology. These are sent to members of the Institute twice a year.

2005 CD#2 InTech2004 - Outstanding Industrial Technology Projects from 2003

InTech2005 - Outstanding Industrial Technology Projects from 2004
Years 11–12 Industrial Technology Electronics Resources
Year 12 Industrial Technology Folio and Product – Graphics Example

2006 CD#1
HSC Exam Hints (Mulwaree High School)
Major Project Selection Guidelines (Mulwaree High School)

2006 CD#2
Intech 2006 - Outstanding Industrial Technology Projects from 2005

2006 CD#2
Intech 2006 - Outstanding Industrial Technology Projects from 2005

2007 CD#1
Intech 2007 - Outstanding Industrial Technology Projects from 2006
Nesting router - latest technology in flat panel machining
Advance Skills - Year 12 Cabinetwork

2007 CD#2
Intech 2007 - Outstanding Industrial Technology Projects from 2006
Industry Study Worksheets

Industrial Technology Poster

Major project folio layout wallchart.

Size: 810mm x 500mm

Copyright free Blackline Masters of Wall Chart notes to print and copy for students.
Hyperlinks to useful, related Web sites

Contact:
Marisa Johnston (ABN: 91 373 982 245)
PO Box 521, Bonnyrigg 2177
Email: marisajohnston@yahoo.com.au
FAX: 9823 8962 PH. 0414 645 159

Esnet

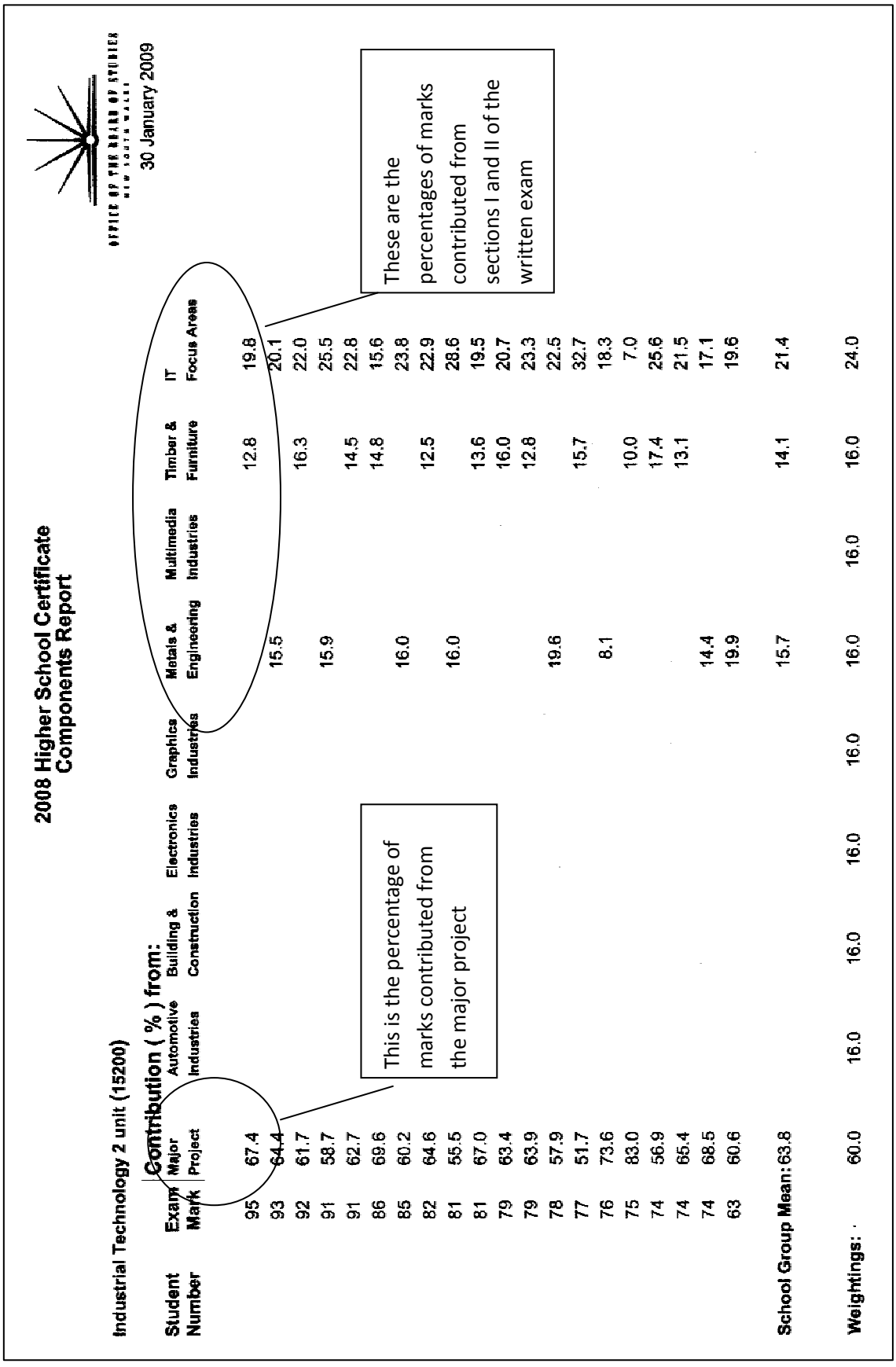
Esnet is an email discussion list that focuses upon matters of interest to industrial arts teachers, primarily. Matters of equipment, technology and resources are frequently discussed.

To join Esnet send an email to Peter Thompson - mrthompsonbphs@yahoo.com

Some Professional Technology Teacher Association links:

Association	URL
Australian Council for Computers in Education	http://www.acce.edu.au/
Computer Studies Teachers Association	http://www.csta.org.au
IIATE Institute of Industrial Arts and Technology Education	http://www.hsc.csu.edu.au/pta/members/ite.html
NSW Computer Education Group	http://www.nswceg.org.au/
Technology Educators Association	http://www.pa.ash.org.au/teanews/

Higher School Certificate Components Report



2008 Higher School Certificate
Components Report

OFFICE OF THE BOARD OF STUDIES
NEW SOUTH WALES
30 January 2009

Industrial Technology 2 unit (15200)

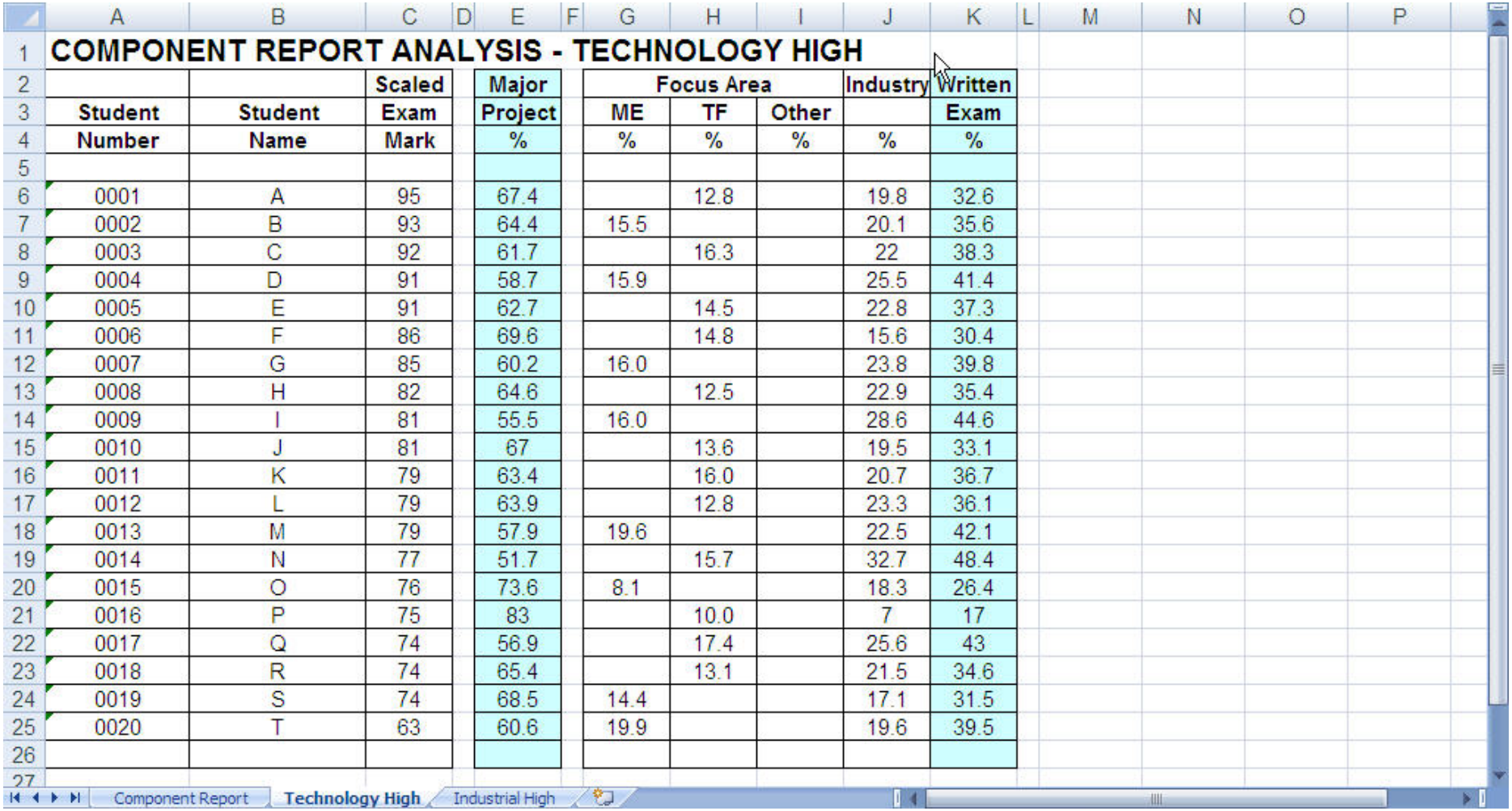
Contribution (%) from:

Student Number	Exam Mark	Major Project	Automotive Industries	Building & Construction	Electronics Industries	Graphics Industries	Metals & Engineering	Multimedia Industries	Timber & Furniture	IT Focus Areas
	95	67.4							12.8	19.8
	93	64.4					15.5			20.1
	92	61.7							16.3	22.0
	91	58.7					15.9			25.5
	91	62.7							14.5	22.8
	86	69.6							14.8	15.6
	85	60.2					16.0			23.8
	82	64.6							12.5	22.9
	81	55.5					16.0			28.6
	81	67.0							13.6	19.5
	79	63.4							16.0	20.7
	79	63.9							12.8	23.3
	78	57.9					19.6			22.5
	77	51.7							15.7	32.7
	76	73.6					8.1			18.3
	75	83.0							10.0	7.0
	74	56.9							17.4	25.6
	74	65.4							13.1	21.5
	74	68.5					14.4			17.1
	63	60.6					19.9			19.6
School Group Mean:		63.8					15.7		14.1	21.4
Weightings:		60.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	24.0

This is the percentage of marks contributed from the major project

These are the percentages of marks contributed from sections I and II of the written exam

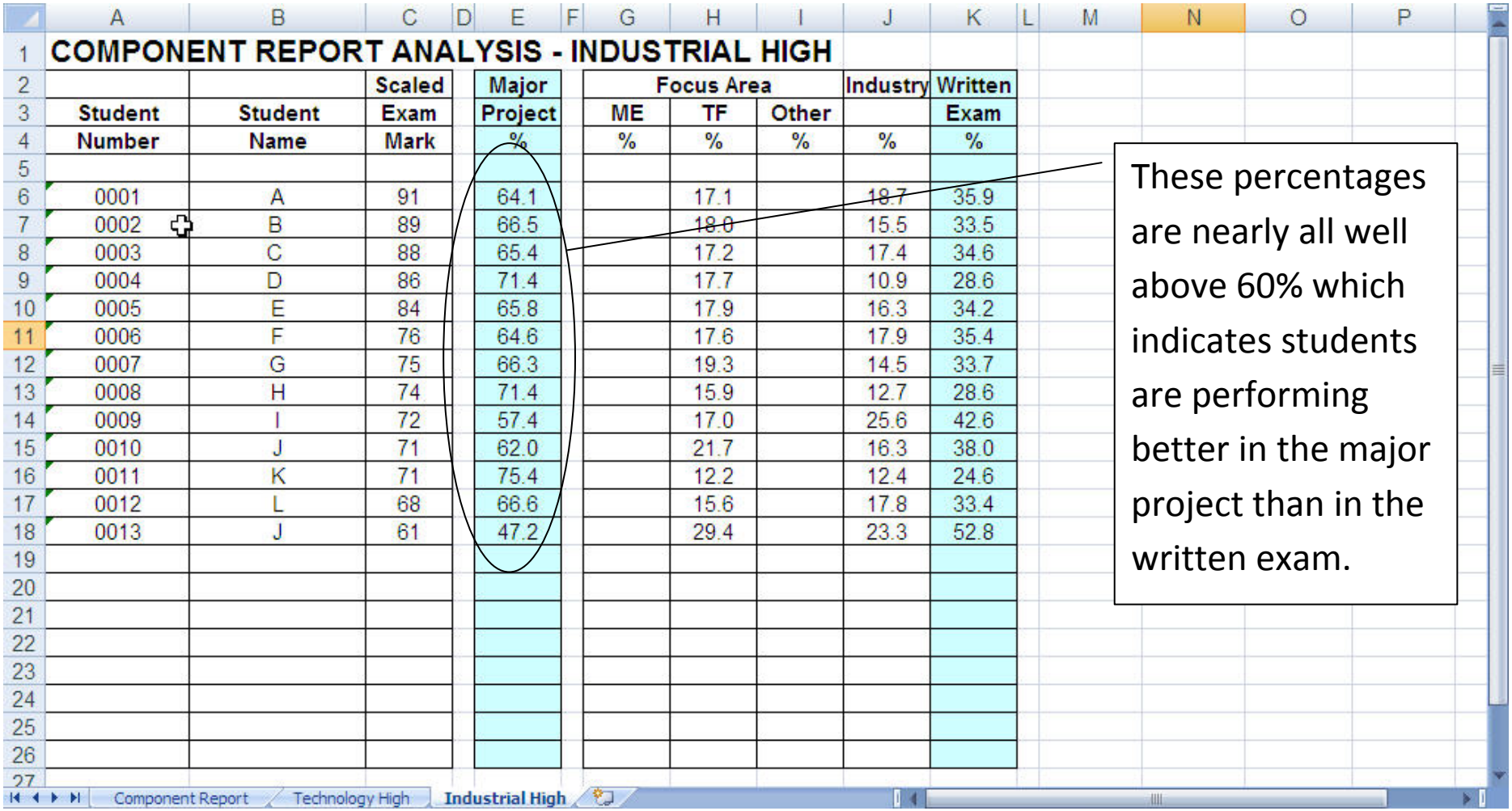
Components Report Analysis Spreadsheet



	A	B	C	E	G	H	I	J	K	M	N	O	P
1	COMPONENT REPORT ANALYSIS - TECHNOLOGY HIGH												
2			Scaled	Major	Focus Area			Industry	Written				
3	Student	Student	Exam	Project	ME	TF	Other		Exam				
4	Number	Name	Mark	%	%	%	%	%	%				
5													
6	0001	A	95	67.4		12.8		19.8	32.6				
7	0002	B	93	64.4	15.5			20.1	35.6				
8	0003	C	92	61.7		16.3		22	38.3				
9	0004	D	91	58.7	15.9			25.5	41.4				
10	0005	E	91	62.7		14.5		22.8	37.3				
11	0006	F	86	69.6		14.8		15.6	30.4				
12	0007	G	85	60.2	16.0			23.8	39.8				
13	0008	H	82	64.6		12.5		22.9	35.4				
14	0009	I	81	55.5	16.0			28.6	44.6				
15	0010	J	81	67		13.6		19.5	33.1				
16	0011	K	79	63.4		16.0		20.7	36.7				
17	0012	L	79	63.9		12.8		23.3	36.1				
18	0013	M	79	57.9	19.6			22.5	42.1				
19	0014	N	77	51.7		15.7		32.7	48.4				
20	0015	O	76	73.6	8.1			18.3	26.4				
21	0016	P	75	83		10.0		7	17				
22	0017	Q	74	56.9		17.4		25.6	43				
23	0018	R	74	65.4		13.1		21.5	34.6				
24	0019	S	74	68.5	14.4			17.1	31.5				
25	0020	T	63	60.6	19.9			19.6	39.5				
26													
27													

Component Report | Technology High | Industrial High

Components Report Analysis Spreadsheet



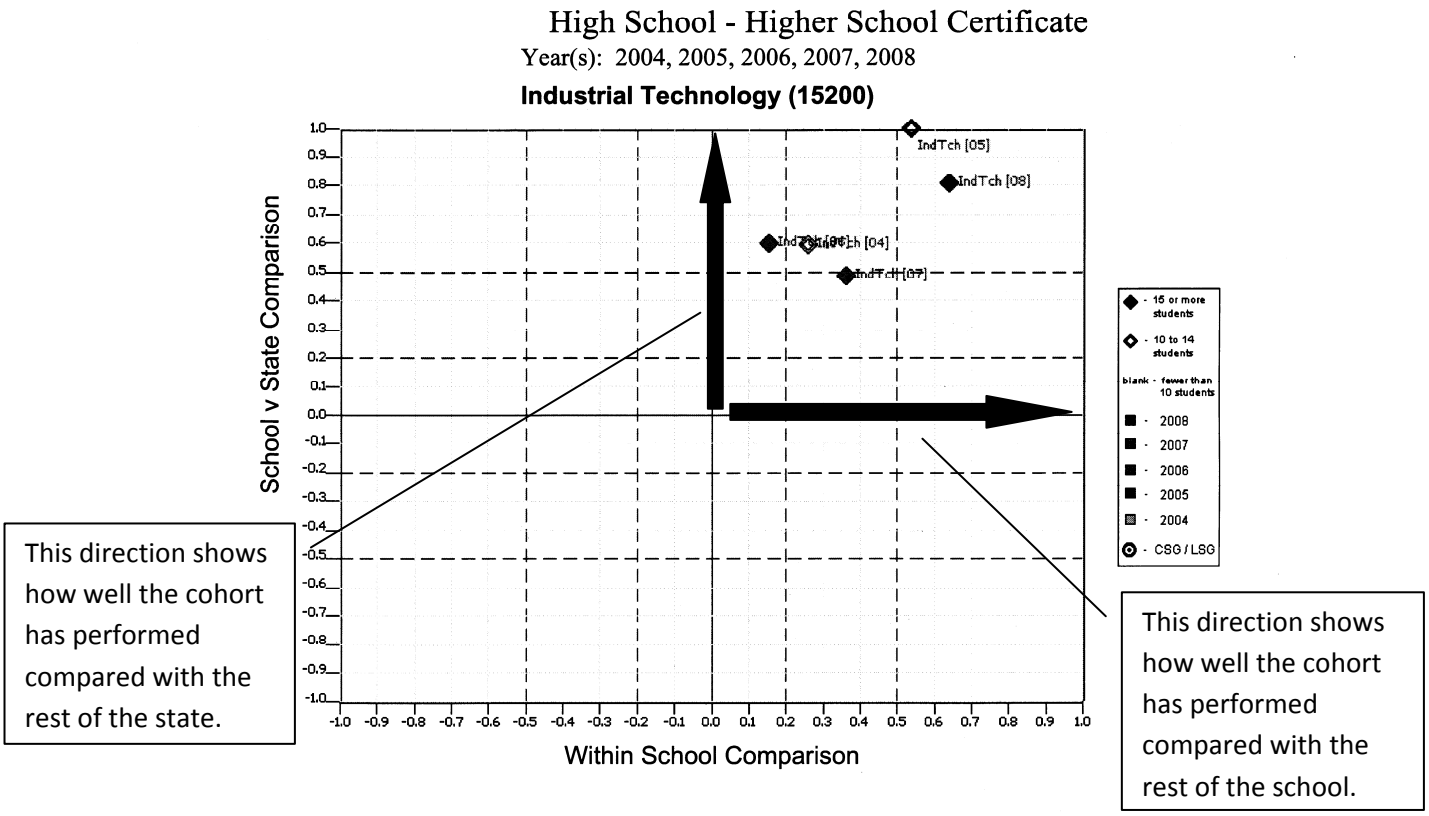
	A	B	C	E	G	H	I	J	K	M	N	O	P
1	COMPONENT REPORT ANALYSIS - INDUSTRIAL HIGH												
2			Scaled	Major	Focus Area			Industry	Written				
3	Student	Student	Exam	Project	ME	TF	Other		Exam				
4	Number	Name	Mark	%	%	%	%	%	%				
5													
6	0001	A	91	64.1		17.1		18.7	35.9				
7	0002	B	89	66.5		18.0		15.5	33.5				
8	0003	C	88	65.4		17.2		17.4	34.6				
9	0004	D	86	71.4		17.7		10.9	28.6				
10	0005	E	84	65.8		17.9		16.3	34.2				
11	0006	F	76	64.6		17.6		17.9	35.4				
12	0007	G	75	66.3		19.3		14.5	33.7				
13	0008	H	74	71.4		15.9		12.7	28.6				
14	0009	I	72	57.4		17.0		25.6	42.6				
15	0010	J	71	62.0		21.7		16.3	38.0				
16	0011	K	71	75.4		12.2		12.4	24.6				
17	0012	L	68	66.6		15.6		17.8	33.4				
18	0013	J	61	47.2		29.4		23.3	52.8				
19													
20													
21													
22													
23													
24													
25													
26													
27													

Component Report | Technology High | Industrial High

These percentages are nearly all well above 60% which indicates students are performing better in the major project than in the written exam.

Higher School Certificate SMART Data

School v State - Within School Analysis (SSWS)
Selected Group: All Students



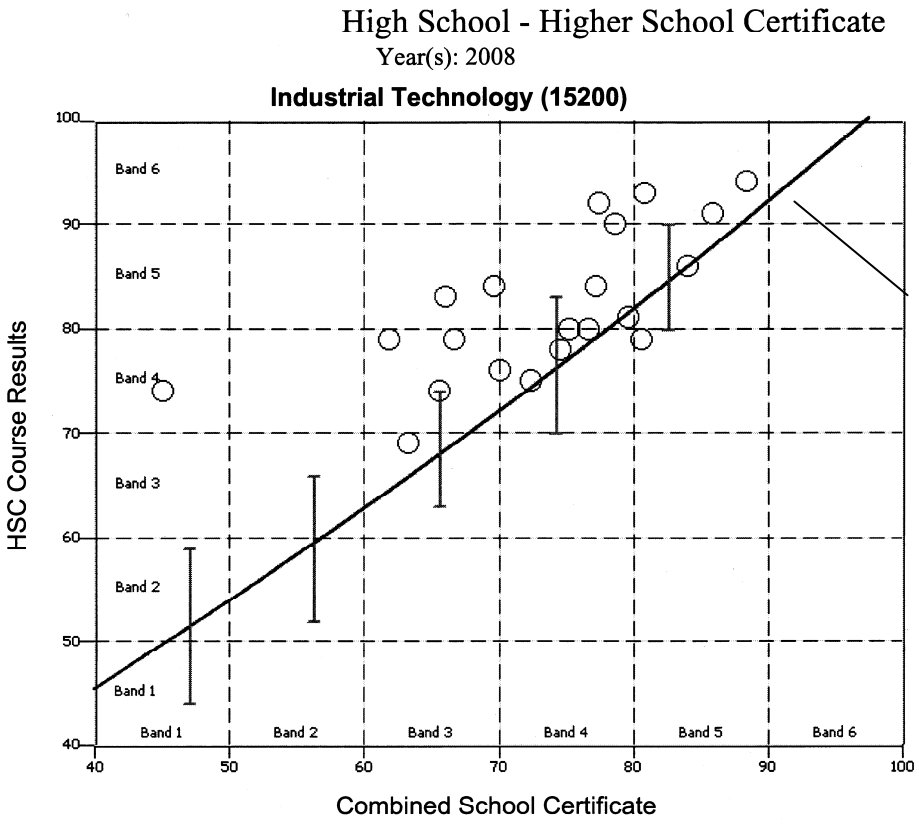
Notes:
No effects are shown for groups with fewer than 10 students.
Effects greater than +1.0 or less than -1.0 have been adjusted to fit within the graph. Full figures are printed in the table.
All courses are scaled into common units for comparison.
The within school comparison compares the average score for a group with the average score for all units studied by those students.
The school v state comparison compares the average score in a group with the average for that group in all DET schools.

Courses	Within School Comparison	School v State Comparison	Number in Group	Abbreviation
[2008] Industrial Technology	0.64	0.81	21	IndTch
[2007] Industrial Technology	0.36	0.49	25	IndTch
[2006] Industrial Technology	0.16	0.60	23	IndTch
[2005] Industrial Technology	0.54	1.06	12	IndTch
[2004] Industrial Technology	0.26	0.59	13	IndTch

Industrial Technology (15200) Printed 30/03/2009

HSC SMART Data for Single Course

ScatterPlot Analysis
Selected Group: All Students



Results above this line indicate the student has improved since the SC. Often referred to as value-adding.

Notes:
This Graph presents the 2008 Higher School Certificate (HSC) course results plotted against the SC scores for the same students. Results of the School Certificate External Tests in English-Literacy, mathematics, science and Australian History (and Geography) Civics and Citizenship have been combined into a single score shown on the horizontal axis for each student. The band divisions shown on the horizontal axis have been imputed for the combined SC result and are not directly related to a specific standards framework.

On the vertical axis, the overall HSC and KLA measures use scaled marks for comparisons. Board of Studies results are reported for individual courses.Students with very low scores are not shown on the graph but are included in the band counts and value added results.

The middle 50% of HSC results within each SC band is delimited with a grey interval bar. The interval bar is located horizontally at the median point of the SC band. The interval bars provide another indicator of where your students are located relative to the state.

The table shows the average HSC value added by students in your school in each SC band. This is the average number of marks above or below the state reference line. Where the average value added in a given category is less than 5 marks, the cell is shaded to indicate that caution should be used in interpretation. Where the number of students is less than 10 in a given SC band, the corresponding cell is shaded to again indicate that caution should be used in interpretation. The average value added in this instance can be strongly influenced by just one or two standout students.

Summary Data on Value Added for Students in Each SC Band

School Results	Year	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6	Total
Number of Students	2008	1	-	6	9	5	-	21
Average Value Added	2008	24.43	-	10.26	4.24	2.86	-	6.60

Industrial Technology (15200) Printed 30/03/2009

Excerpt from Revised Stage 6 Industrial Technology Syllabus

Assessment Components, Weightings and Tasks

Assessment should include a range of tasks.

Preliminary Course

The suggested components, weightings and tasks for the Preliminary course are set out below.

Component	Weighting	Tasks might include:
Industry Study	15	Tasks might include: • research • industry report • partial design, management report • tests • measuring and costing activities • working drawings • folio presentation • written test • practical skills test • research relevant industrial processes
Design	10	
Management and Communication	20	
Production	40	
Industry Related Manufacturing Technology	15	
Total	100	

There should be a balance between the assessment of:

- knowledge and understanding outcomes and course content and
- skills outcomes and course content.

HSC Course

The internal assessment mark for Industrial Technology Stage 6 is to be based on the HSC course only. Final assessment should be based on a range and balance of assessment instruments. Aspects of the Major Project that are used for school-based assessment should not use the HSC examination marking criteria for internal assessment.

Component	Weighting	Tasks might include:
Industry Study	15	Tasks might include: • broad industry report • document research activities relevant to folio development • research and application of a range of processes and technologies to the development of the Major Project
Major Project	60	
Industry Related Manufacturing Technology	25	
Total	100	

There should be a balance between the assessment of:

- knowledge and understanding outcomes and course content and
- skills outcomes and content.

One task may be used to assess several components. It is suggested that 3–5 tasks are sufficient to assess the HSC course outcomes.

This document is available on the Board of Studies website:

http://www.boardofstudies.nsw.edu.au/syllabus_hsc/syllabus2000_listi.html

The information on these last two pages may change over the next 6-8 months.

Objectives and Outcomes

Table of Objectives and Outcomes

Objectives	*Preliminary Outcomes*	*HSC Outcomes*
Students will develop 1. knowledge and understanding of the focus area industry and of manufacturing processes and techniques used by industry	*A student:* P1.1 describes the organisation and management of an individual business within the focus area industry P1.2 identifies appropriate equipment, production and manufacturing techniques, including new and developing technologies New HSC outcome to include study of historical aspects of the industry	*A student:* H1.1 investigates industry through the study of businesses in one focus area H1.2 identifies appropriate equipment, production and manufacturing techniques and describes the impact of new and developing technologies in industry H1.3 identifies important historical developments in the focus area industry
2. knowledge and understanding of safe and cooperative work practices and of the need for a safe and cooperative work environment	P2.1 describes and uses safe working practices and correct workshop equipment maintenance techniques P2.2 works effectively in team situations	H2.1 demonstrates proficiency in the use of safe working practices and workshop equipment maintenance techniques
3. competence in designing, managing and communicating within a relevant industry context	P3.1 sketches, produces and interprets drawings in the production of projects P3.2 applies research and problem-solving skills P3.3 demonstrates appropriate design principles in the production of projects	H3.1 ~~is skilled~~ demonstrates skills in sketching, producing and interpreting drawings H3.2 selects and applies appropriate research and problem-solving skills H3.3 applies and justifies design principles ~~effectively~~ through the production of a Major ~~p~~Project~~s~~

Objectives	*Preliminary Outcomes*	*HSC Outcomes*
4. knowledge and skills in producing quality products	P4.1 demonstrates a range of practical skills in the production of projects P4.2 demonstrates competency in using relevant equipment, machinery and processes P4.3 identifies and explains the properties and characteristics of materials/components through the production of projects	H4.1 demonstrates competency in a range of practical skills appropriate to the ~~m~~Major ~~p~~Project H4.2 explores the need to outsource appropriate expertise where necessary to complement personal practical skills H4.3 critically applies knowledge and skills related to properties and characteristics of materials/components
5. knowledge and skills in communication and information processing related to the industry focus area	P5.1 uses communication and information processing skills P5.2 uses appropriate documentation techniques related to the management of projects	H5.1 selects and uses communication and information processing skills H5.2 ~~selects~~ examines and applies appropriate documentation techniques to project management
6. an appreciation of quality products and the principles of quality control	P6.1 identifies the characteristics of quality manufactured products P6.2 identifies and explains the principles of quality and quality control	H6.1 evaluates the characteristics of quality manufactured products H6.2 applies the principles of quality and quality control
7. an appreciation of the relationships between technology, the individual, society and the environment	P7.1 identifies the impact of one related industry on the social and physical environment P7.2 identifies the impact of existing, new and emerging technologies of one related industry on society and the environment	H7.1 explains the impact of the focus area industry on the social and physical environment H7.2 analyses the impact of existing, new and emerging technologies of the focus industry on society and the environment

Changes and additions to both Preliminary and HSC outcomes to reflect current societal and environmental concerns

Industrial Technology
HSC Assessment Task 1: Design & Planning

This task is intended to select and develop the design and workshop drawings for the Major Project. These sections should be completed with as much detail as possible, they should be word processed but design sketches should be included as drawn.

Design and Management

H3.1 is skilled in sketching, producing and interpreting drawings
H3.2 selects and applies appropriate research and problem-solving skills

Communication

H5.1 selects and uses communication and information processing skills
H5.2 selects and applies appropriate documentation techniques to project management

Assessment weighting 15% **Date Due: Tuesday 17th Nov. 2009**

Students learn about:	*Students learn to:*
Design, management and communication	
• application of design principles in the production of the Major Project: – research – design development – sketching and idea generation – prototyping, modelling and testing – production and working drawings – quality and ongoing evaluation	❖ explain and justify decisions made during the designing/modifying and planning stages of the Major Project ❖ refine skills in interpreting and creating drawings relevant to the Major Project ❖ prepare all necessary sketches and working drawings required for the production of the Major Project
– selection of appropriate materials, processes and resources	• select and justify appropriate materials to be used in the Major Project
– development of time and finance plans	• apply time and finance plans when completing the Major Project
• application of management and communication skills to produce a related folio justifying: – research – design – analysis – evaluation including selection of appropriate materials, components, processes and technologies – ICT – OHS – management – presentation	• utilise appropriate ICT in the development and production of the related folio ❖ incorporate a range of presentation skills and techniques in the development and production of the related folio

Task Details

Outcome	Marks	Question
3.2	30	1. Describe a range of freehand drawing and sketching styles and drawing media. Justify the selection of an appropriate freehand drawing (final design sketch) with regard to the needs of your major project.
3.1	30	2. Provide an annotated detailed freehand drawing (final design sketch) of your project. Include the overall dimensions of your project only.
5.1	30	3. Justify the selection of other appropriate drawings to assist in the design and production of your major project. These may relate to workshop drawings, working rods, templates.
5.2	30	4. With regard to your design, management and communication folio select and justify the folio size, paper and formatting that best meet the needs of your folio.
5.1	30	5. Present a title page, contents page and statement of intent for your major project suitably formatted according to the selections made in question 3.
TOTAL	**150**	

Glossary of Terms

Describe	Provide characteristics and features
Justify	Support an argument or conclusion

Marking Rubric

Mark Range	30–24	23–17	16–9	8–0
Q 1	Describes and justifies the selection of appropriate drawing and sketching styles and drawing media to meet the needs of the major project	Describes appropriate drawing and sketching styles and drawing media to meet the needs of the major project	Lists drawing and sketching styles and drawing media to meet the needs of the major project	Lists some drawing and sketching styles and drawing media to meet the needs of the major project
Q 2	A high quality annotated freehand drawing showing detail and overall dimensions	An annotated freehand drawing showing detail and overall dimensions	An annotated freehand drawing showing detail or overall dimensions	A basic freehand drawing
Q 3	Justifies the selection of appropriate drawings to assist in the design and production of the major project	Describes appropriate drawings to assist in the design and production of the major project	Describes some drawings to assist in the design and production of the major project	Describes some drawings to assist in the design or production of the major project
Q 4	Describes and justifies the selection of appropriate folio size, paper and formatting to meet the needs of the folio	Describes the selection of appropriate folio size, paper and formatting to meet the needs of the folio	Lists suitable folio sizes, paper and formatting	Lists some suitable folio sizes and/or paper and/or formatting
Q 5	Presents a suitably formatted title page, contents page and statement of intent for the folio	Presents a formatted title page, contents page and statement of intent for the folio	Presents a title page and contents page without statement of intent	Presents a title page and/or contents page without statement of intent

Activity 2c - Reciprocal Teaching Strategy

This article *'Better Lithium-ion Batteries'* by Prachi Patel, was originally posted on the *Technology Review* webpage published by the *Massachusetts Institute of Technology* on Friday, March 27, 2009.

Better Lithium-ion Batteries

A new incarnation of lithium-ion batteries based on solid polymers is in the works. Berkeley, CA-based startup Seeo, Inc. says its lithium-ion cells will be safer, longer-lasting, lighter, and cheaper than current batteries. Seeo's batteries use thin films of polymer as the electrolyte and high-energy-density, light-weight electrodes. Lawrence Berkeley National Laboratory is now making and testing cells designed by the University of California, Berkeley spinoff.

Lithium-ion batteries are used in cell phones and laptops because they are smaller and lighter than other types of batteries. They are also promising for electric and hybrid vehicles. However, conventional materials and chemistries have stopped them from being used extensively in cars.

Today's lithium-ion batteries use lithium cobalt oxide electrodes and a liquid electrolyte, typically lithium salts dissolved in an organic solvent. The electrode material can release oxygen when overcharged or punctured, causing the flammable solvent to catch fire and the battery to explode. Besides, 'the charged electrodes are very reactive with the liquid electrolyte, which reduces power and [cycle-life],' says Khalil Amine, manager of the advanced battery technology group at Argonne National Laboratory.

Seeo's key breakthrough is a solid polymer electrolyte. It is not flammable and hence inherently safer. In addition, the battery will retain more of its capacity over time because the polymer does not react with the charged electrode. 'Lifetime data suggests that conventional lithium-ion systems lose about 40 percent capacity in 500 cycles,' says Mohit Singh, the cofounder of Seeo. 'We get a much better cycle life. We can go through 1,000 cycles with less than 5 percent capacity loss.'

For the negative electrode, or anode, the electrolyte also works with lithium metal films, which are lighter than current anode materials. That means the battery can provide more energy for the same weight. Based on the battery's single cell, Seeo has calculated that it would have an energy density of up to 300 watt-hours per kilogram, which is 50 percent greater than lithium-ion batteries that are on the market today.

Batteries with solid electrolytes have the added bonus of being cheaper to manufacture, Amine says. While liquid electrolytes have to be tightly sealed inside a laser-welded metal container, plastic electrolytes can be packaged inside heat-sealed pouches.

The advantages of polymer materials have warranted research on polymer electrolytes for more than three decades. In fact, lithium polymer batteries are already found in radio-controlled cars and MP3 players. But they use a polymer gel containing solvents, so, like liquid electrolytes they carry the risks of fire or explosion and do not have a very long life.

Making solid polymers that are as conductive as liquid electrolytes has been difficult. In a charging battery, the electrolyte conducts lithium ions from the positive electrode, or cathode, to the anode. The higher the conductivity of the electrolyte, the faster the battery charges. St. Paul, MN-based 3M and Montreal, Canada-based electricity provider Hydro-Québec have spent more than 10 years on solid-polymer lithium batteries. 'But you have to operate the polymer at 60 degrees Celsius to improve conductivity,' Amine says. 'This is not very practical.'

The problem is that a polymer's conductivity and mechanical strength do not go hand-in-hand. 'If people tried to make polymers with high ionic conductivity they would end up with a goop,' Singh says.

Seeo has gotten around the problem by making films with block copolymers: materials containing two linked polymer chains that self-assemble into nanostructures. One of the polymers forms an array of conductive cylinders that are embedded within the other polymer, which serves as a hard matrix. Singh says the electrolyte film is robust and is almost as conductive as liquid electrolytes.

Seeo's technology 'has become very attractive' because of its claim of a high-conductivity polymer, Amine says. However, 'the lithium anode could be a show-stopper.' Lithium has a tendency to get roughened at the surface and grow crystal dendrites that can reach the cathode and short the battery. The company will need to do long-term tests to show that its polymer is hard enough to block the dendrites.

Polymer electrolytes also have one big inherent disadvantage. 'Polymers will always be limited by lower ionic conductivity compared to liquids,' Singh says. This means that Seeo's battery would be limited for use in laptops and electric vehicles. 'But these polymers wouldn't be able to address quick-charge applications like hybrid-electric vehicles or power tools.'

http://www.technologyreview.com/energy/22351/

Glossary of terms

array	a group of things arranged in a structured way
block copolymers	materials containing two linked polymer chains that self-assemble into nanostructures
cobalt	a tough brittle silvery-white metallic element
conductive	transmitting or able to transmit energy, particularly heat or electricity
copolymer	two linked polymer chains that link together
crystal dendrites	a crystal that grows in the shape of a tree
cycles	a cycle is the process of charging and discharging a battery
electrode	a conductor through which electricity enters or leaves something such as a battery
electrolytes	a chemical compound that separates into ions in a solution and is able to conduct electricity
goop	a sticky mass that lacks viscosity
heat-sealed	to make packaging material, usually a thin clear plastic film, airtight around something by applying heat and pressure
energy density	the amount of energy that can be released compared to the density of the material
hybrid-electric vehicles	vehicles that can operate on both electricity and conventional fuel systems
ion	matter in the form of charged atoms or groups of atoms
ionic conductivity	an electrical circuit created by the movement of charged atoms or groups of atoms
incarnation	a new form or existence
laser welded	the melting and joining of metals by a highly focused beam of single-wavelength radiation
lithium	a soft silver-white element that is the lightest metal known
matrix	a regular arrangement of parts
nanostructures	an extremely small structure such as a semiconductor or optoelectronic device with dimensions of 0.1-50 nm
polymer	a long chain molecule, commonly referred to as plastics
solvent	able to dissolve substances
watt hours	a measure of the power output

INDUSTRIAL TECHNOLOGY MARKSHEET

Candidate:						**Project:**
Description:						
Focus area:						**Comments:**
Design	**20–17**	**16–13**	**12–9**	**8–5**	**4–1**	
Statement of intent						
Research						
Development of ideas						
Selection and justification of materials, components, processes and other resources						
Management and communication						
Timeline plan						
Finance plan						
Use of appropriate industrial processes and equipment						
Evidence of safe working practices and OHS issues						
Evidence of ongoing evaluation						
Appropriateness of design and/or design modification						
Student's evaluation of the Major Project and its relationship to the statement of intent						
Evidence of a range of communication techniques						
Evidence of a range of computer applications e.g. word processing, spreadsheets, CAD, multimedia						
MARK/20						
Production	**40–33**	**32–25**	**24–17**	**16–9**	**8–1**	
Quality of product						
Evidence of a range of skills						
Degree of difficulty						
Links between planning and production						
Evidence of industrial processes						
Use of appropriate materials						
Use of industrial technologies						
Evidence of solutions to problems in production						
MARK/40						

Activity 3a -Using the Marking Guidelines

If we look at the marking guidelines for the selection and justification we see a distinct change in the criteria at each level.

Criteria	Marks
Design and Management • Describes and justifies the selection of appropriate materials, components, processes, including industrial processes and equipment, and other resources in the development of the major project	**17–20**

Criteria	Marks
Design and Management • Describes the selection and use of appropriate materials, components, processes, including industrial processes and equipment, and other resources in the development of the major project	**13–16**

Criteria	Marks
Design and Management • Lists materials, components, processes, including simple industrial processes and equipment, and other resources in the development of the major project	**9–12**

Criteria	Marks
Design and Management • Lists some of the materials, components, processes and other resources in the development of the major project, with little evidence of consideration of industrial processes and equipment	**5–8**

Criteria	Marks
Design and Management • Lists some of the materials, components, simple processes and other resources in the development of the major project, with no evidence of consideration of industrial processes and equipment	**1–4**

Using the Marking Guidelines

If we look at the marking guidelines for the timeline and finance plan we see a distinct change in the criteria at each level.

Criteria	Marks
Design and Management • Formulates a comprehensive and appropriate timeline and finance plan	**17–20**

Criteria	Marks
Design and Management • Formulates an appropriate timeline and finance plan	**13–16**

Criteria	Marks
Design and Management • Proposes a basic timeline and finance plan for aspects of project production	**9–12**

Criteria	Marks
Design and Management • Timelines and finance plans are without sufficient detail	**5–8**

Criteria	Marks
Design and Management • Timelines and finance plans are either not appropriate or not evident	**1–4**

What this might look like in a table that better suits the needs of the practical markers:

Design and Management	20–17	16–13	12–9	8–5	4–1
Selection and justification of components, processes, and other resources	• Describes and justifies the selection of appropriate materials, components, processes, including industrial processes and equipment, and other resources in the development of the major project	• Describes the selection and use of appropriate materials, components, processes, including industrial processes and equipment, and other resources in the development of the major project	• Lists materials, components, processes, including simple industrial processes and equipment, and other resources in the development of the major project	• Lists some of the materials, components, processes and other resources in the development of the major project, with little evidence of consideration of industrial processes and equipment	• Lists some of the materials, components, simple processes and other resources in the development of the major project, with no evidence of consideration of industrial processes and equipment

Design and Management	20–17	16–13	12–9	8–5	4–1
timeline plan – projected order of production and estimate of time allocation **finance plan – projected cost of materials and services (if applicable)**	• Formulates a comprehensive and appropriate timeline and finance plan	• Formulates an appropriate timeline and finance plan	• Proposes a basic timeline and finance plan for aspects of project production	• Timelines and finance plans are without sufficient detail	• Timelines and finance plans are either not appropriate or not evident

Marking Guidelines for *Evidence of a Range of Skills*

40 -33	32 -25	24 -17	16 -9	8 -1
A highly demanding project, with evidence of high quality in the application of a wide range of skills and techniques in the planning and production of the major project	A project of substantial difficulty, with evidence of high quality in the application of most skills and techniques in the planning and production of the major project	A project of moderate difficulty, with evidence of high but inconsistent quality in the application of skills and techniques in the planning and production of the major project	A project of minimal difficulty, with evidence of basic quality in the application of skills and techniques in the planning and production of the major project	An undemanding project, with minimal or no evidence of quality in the application of skills and techniques in the planning and development of the major project

Tips from Experienced Markers

General Tips

1. All pages to be numbered - otherwise your folio looks like it is full of add-ins.
2. Use Header and Footer to improve your presentation.
3. Your final design of your Major Project should be drawn as a quality pictorial drawing either by hand or using CAD (Computer Assisted Drafting).
4. The Finance Plan should start with a plan for your project, how much you think it will cost for the components and materials. The actual Finance Plan will detail the exact costs and may be quite different to the original estimates. Evaluating how and why it changed will attract additional marks.
5. Timeline Plan is the very first thing that you do! Another Timeline Plan can be done later if necessary if there are things that you forgot to add or if there is a change in direction with your project.
6. Use a diary or notebook to record the actual work that you have done each day or week. Do not type this out at a later time, include it with your folio.
7. If you are planning a project that requires skills that you are not confident with - research as much as you can and do a couple of practice pieces. Don't be afraid of having a go. Submit all practice pieces as evidence of your research and investigation.
8. Any practice piece you have used to try and get something right is to be displayed with the Major Project and acknowledged in the Folio with an explanation as to what you were trying to do and an evaluation of the process.
9. Take lots of photos—make sure they are relevant and are explained in the Folio. As you take photos it is important that you show detail of both you and the part of the project that you are working on, e.g. a completed joint on the corner of a frame could be one of any number of joints. Make sure you are wearing correct PPE in all photos.
10. If you do work of in industrial setting, e.g. upholstery for a chair, get photos of you doing the work and a note from the owner of the business to verify that you did the work under his/her supervision.

Automotive Technologies

1. Statement of Intent. In Automotive it is not sufficient to say that “I am rebuilding an engine”, you should justify why the engine needs to be rebuilt e.g. blowing smoke out of the exhaust, engine knocks etc.
2. Research should relate to the statement of intent. The relevance of this research should be clearly stated and justified. It is expected that research would include measurements of engine components and research into replacement parts or machining.
3. Design modifications should be evident and therefore it would be reasonable to expect that the candidate has included research on alternative components/parts and processes.
4. The folio is the only means of communicating with the examiner the work you have done to reach the final product. ESPECIALLY in Automotive you must

show the procedures that are part of the project. Without a folio the examiner is unable to verify the work carried out.

5. In automotive technology, workshop drawings are encouraged, e.g. where special tools need to be constructed, although the quality of the drawings may vary. It is essential that correct sequencing be apparent in the folio. This can be by the presentation of flow charts or reference to the record of procedures in the folio. Most Automotive students will adequately use sketch drawings as an effective means of communication.
6. If using specialised tools or equipment, state in the folio the correct name of the tool and the measurements and/or readings, e.g. tension wrench set at 135Nm.
7. In Automotive make sure you measure everything. If you are doing any work with a motor, e.g. measure piston rings and relate to a workshop manual - this will have acceptable tolerances.
8. Get a mechanic to check and maybe certify that the motor is seized, not working or beyond economical repair before you start. This gives the examiner a clear guideline as to where you're starting from. One student stamped his initials into the block before he started because when he had finished, he had done such a good job of the restoration work that the engine could have been a totally different one except for the initials.
9. Design is the sequencing of events that you will follow.
10. Make sure the project is really an automotive project; a trailer is more a metal and engineering project.
11. Safety must be incorporated in the project design and construction. Check that engines are well supported when worked on and that safety jacks are in place when working under a vehicle. A number of automotive projects will have work done on them at home, ensure that safety clothing and equipment is still being used.

Electronics Technologies

1. Do not allow students to make a project of more than 32 volts unless they can get it certified and can work in class with their project connected to less than 32 volts.
2. Students find it difficult to design circuits. They generally copy a given design. Better projects generally link circuit boards together or do minor modifications to existing plans.
3. Do not try to fool the markers, very few people can design a circuit to perform a function unless it is very simple.
4. High band students make their own circuit boards using photo etching and ammonium persulphate. Lower band students buy commercially prepared circuit boards unless they are very complicated.
5. The quality of the housing/casing in its shape, accuracy of cutting holes, component layout and positioning of components tends to separate the quality of projects.

6. The quality of soldering, such as the amount and accuracy of solder, use of heat shrink, cable ties etc, distinguishes between projects with similar electronic components.
7. If a project does not work, credit is given for the components that are completed, i.e. for the soldering on a circuit board, electrical components in the correct position in a circuit board, making of a casing etc.
8. During the manufacture of their project students should have made progressive checks on the working of sections as they are completed. These checks and testing procedures should be recorded in the folio, so if the project does not work, certain parts have a record that they do/did work.
9. Be aware of the time involved in planning and designing a link between circuit boards as against using a kit construction project.
10. A photographic record of work completed is advisable as some parts of the project might not be accessible to the markers.
11. It is advisable to have the project casing easily removable for marking, so all completed work is visible. This helps the markers and can reduce the risk of any damage to the project.
12. Include any test specimens or records of tests done under construction of the projects, i.e. checking the tolerances of components before they are placed in the circuit board.
13. Some poorer projects look good but are only an assembly of a kit project and do not require a lot of skills.

Graphics Technologies

1. A difficult part of marking Graphics candidates is often separating the folio from the project. Ensure that the examination criteria regarding the folio and design are applied.
2. The folio is the only means of communicating with the examiner the work the candidate has done to reach the final project. Therefore it would be reasonable to find an array of related information in the folio, including sketches of drawings, clippings, photographs, colour choices, experimentation of various media to be employed, even design layouts for the actual presentation.
3. Evolution in design should be evident. Candidates should clearly show a progression from ideas to concepts to final drawing.
4. OH&S issues can be incorporated through ergonomics, anthropometric sizes, lighting, ventilation issues or height/size regulations e.g. balcony design.
5. Models do have their place in Graphics Technologies, but not at the expense of drawings. They should enhance the drawings but not be the overall focus.
6. Something to remember about graphics is that it isn't just architectural or engineering drawing. Some students are pushing the boundaries and beginning to challenge the way we think. We have had comic books, advertising posters, photographic images and, even a child's story book.
7. The markers will mark the graphics, not a particularly good story line. If the quality of graphics work is not there then the project will score poorly.

8. Some graphics students may actually present projects that could be classified as a multimedia project, but because they are graphics students the project is marked against the graphics course content. This may cost them marks. In the same way that a model can be used to enhance a graphics project, some multimedia can do the same but should not become the focus of the major project.

Metal and Engineering Technologies

1. If you are going to paint or powdercoat your project make sure you have some 'before' photos to show off your welding/joining skills. No photos may mean you have something to hide!
2. Any specialised jigs needed to keep your frame square during welding should be included for the markers.
3. Trailers should be registered, even those intended for 'farm use' only.

Multimedia Technologies

1. Multimedia is any combination of two or more of graphics, sound, video and audio files.
2. Check that each marker can view your project independently. Each marker will want to arrive at their own mark for your work without distractions.
3. Ensure that your project will open on the given computer.
4. Ensure that any additional AV devices that are used as part of the presentation of a candidate's project are fully operational and that it will be available for the duration of the entire marking period.

Timber Products and Furniture Technologies

1. Make sure you use an appropriate finish for the intended use of the furniture, don't use an interior finish on an exterior project.
2. Evaluation of the major project: The evaluation of the major project is usually found at the end of the major project however there should also be ongoing evaluation of the project through the development of the folio. This can often take the form of problem solving techniques and methods of construction that vary from the original plan. The final evaluation of an item of furniture would be more impressive if provided by a professional cabinetmaker rather than the student's friends.
3. Ongoing evaluation should be evident and can manifest itself in a variety of ways. Changes in design, construction methods or problem solving are all evidence of ongoing evaluation. For example, the development of process to laminate or steam bend timber often requires a number of changes before success is achieved.
4. Research should relate to the project being undertaken. Types of timbers and finishes, joints construction, lamination and bending techniques are some of the areas of research that relate to furniture construction. The relevance of this research should be clearly stated and justified. The collection of pamphlets and other unexplained research will be ignored. It is expected that the research should relate to the project that is defined in the statement of intent.