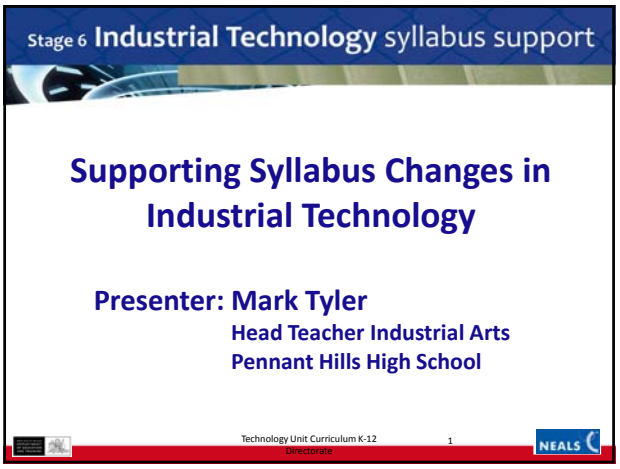
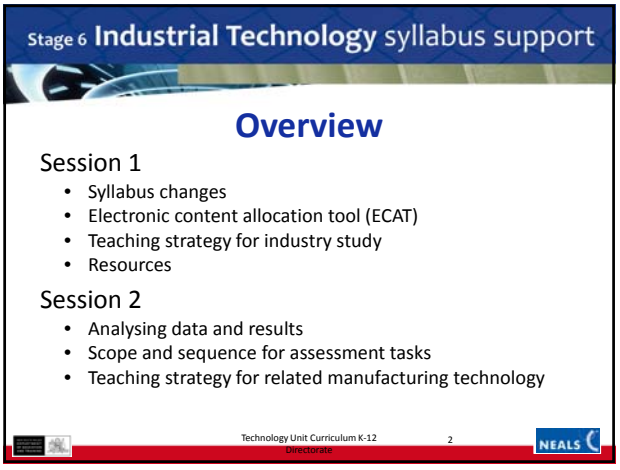
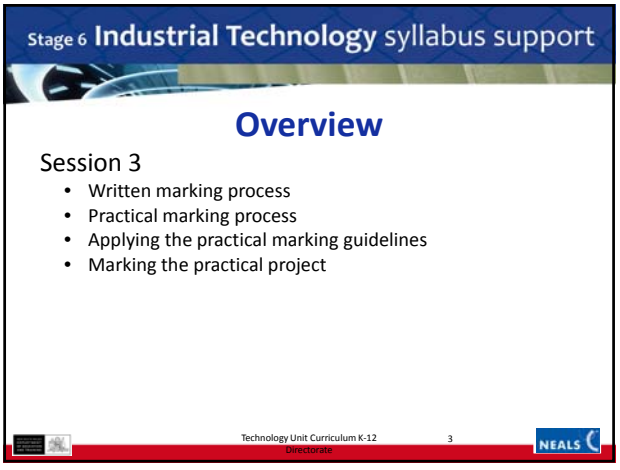
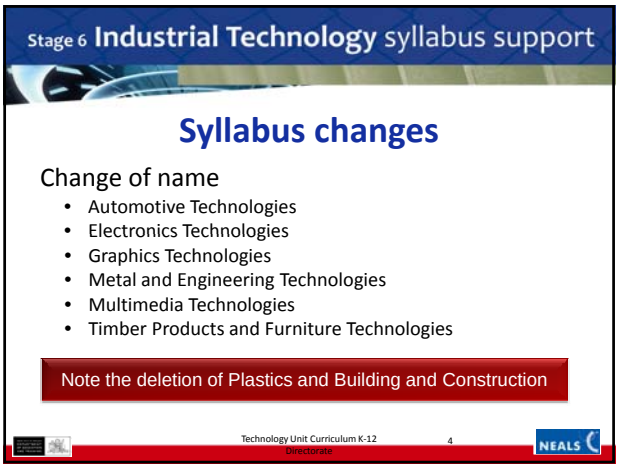
Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

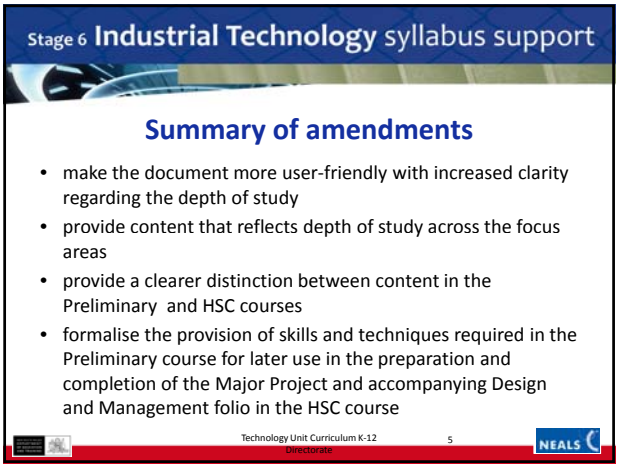


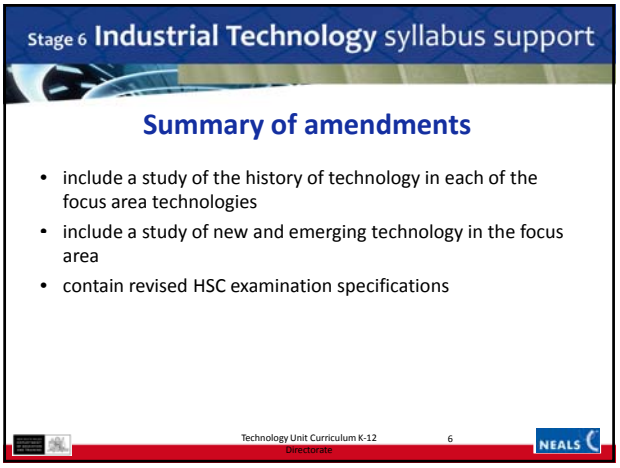




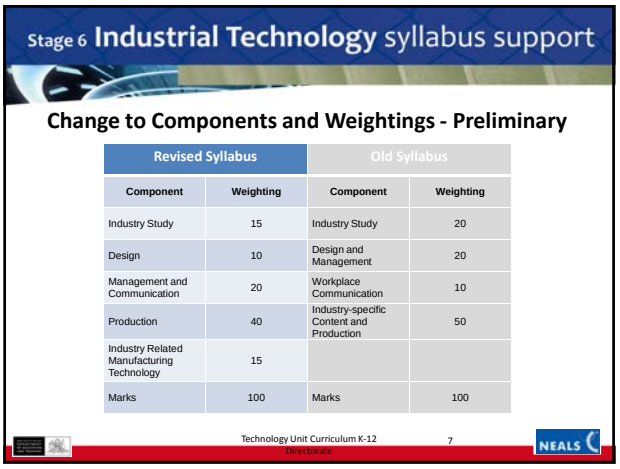
Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

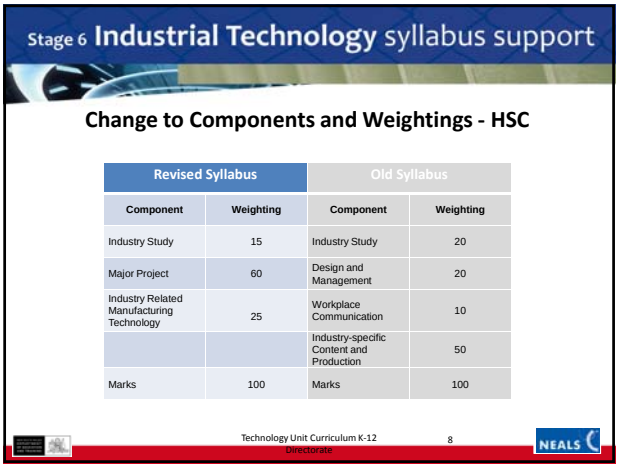


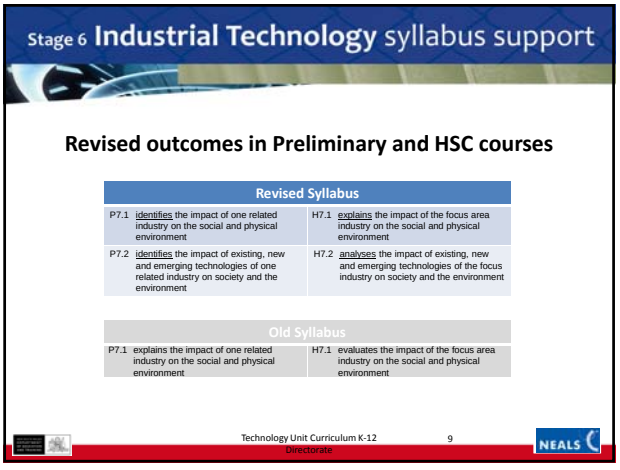




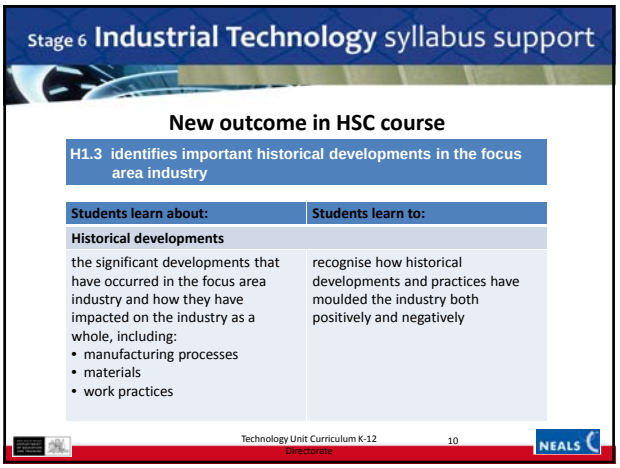
Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

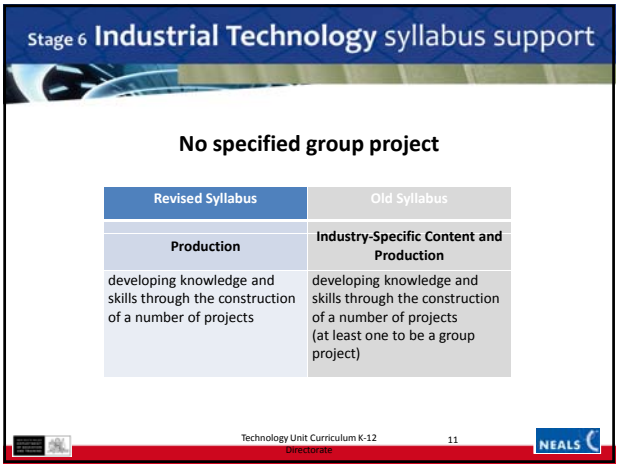


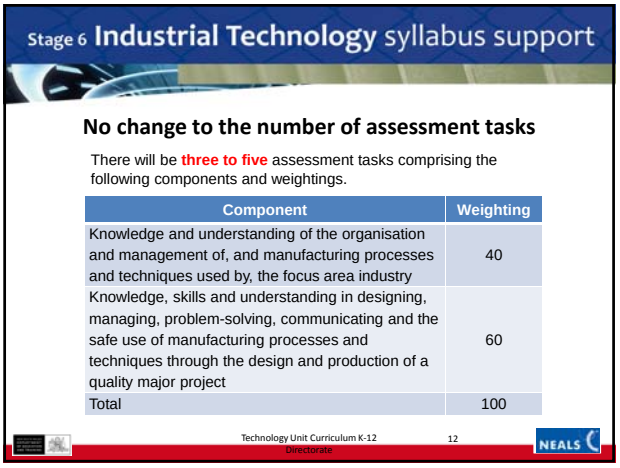




Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology







Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

Changes to the written examination

Section/Part	Marks
Section I • Objective response questions specific to each industry focus area	10
Section II • Short-answer questions specific to each industry focus area	15
Section III • One structured extended response question with an expected length of response of around four examination writing booklet pages (approximately 600 words) in total, based on the Industry Study section of the course. This question will be common to all six examination papers.	15
Total	40

Technology Unit Curriculum K-12 Directorate 13 NEALS

Stage 6 Industrial Technology syllabus support

Need for structured theory lessons

- Inclusion of H1.3 on historical developments
- Greater emphasis on impacts of industry on social and physical environment (P7.1, H7.1)
- Greater emphasis on impact of new and emerging technologies on society and the environment (P7.2, H7.2)
- Higher-order Thinking and Deep Understanding – explains and analyses instead of evaluates
- Structured extended response question with an expected length of response of around four examination writing booklet pages (approximately 600 words)

Technology Unit Curriculum K-12 Directorate 14 NEALS

Stage 6 Industrial Technology syllabus support

Activity 1a

Electronic Content Allocation Tool (ECAT)

Detailed steps of the process of using ECAT are listed on page 7 of the *Resource Book*.

Industrial Technology Preliminary ECAT

Technology Unit Curriculum K-12 Directorate 15 NEALS

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Supporting syllabus changes in Industrial Technology

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Electronic Content Allocation Tool (ECAT)

How can I use this at my school?

- Checking my programs to ensure all content is covered.
- Checking individual tasks to ensure the required content is covered.
- Constructing programs by cutting and pasting content into a new document.

Technology Unit Curriculum K-12 Directorate 16 NEALS

Stage 6 Industrial Technology syllabus support

Activity 1b – Environmental and sociological issues

The increased emphasis of the impact of each focus area on the social and physical environment will require a range of new teaching strategies.

• On page 6 of your *Participant workbook* is an activity relating to the article *Environment safe and good for jobs.*

Technology Unit Curriculum K-12 Directorate 17 NEALS

Stage 6 Industrial Technology syllabus support

Resources

Technology Unit Curriculum K-12 Directorate 18 NEALS

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Supporting syllabus changes in Industrial Technology

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Websites

Your Resource book contains links to a number of websites that will assist with programming and resource development.

- **Curriculum Support**
  www.curriculumsupport.education.nsw.gov.au/secondary/technology/index.htm
- **Board of Studies**
  http://www.boardofstudies.nsw.edu.au/syllabus_hsc/industrial-technology.html
- **Teaching and learning exchange (Tale)**
  www.tale.edu.au
- **HSC Online**
  http://www.hsc.csu.edu.au/ind_tech/

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Searching through Tale

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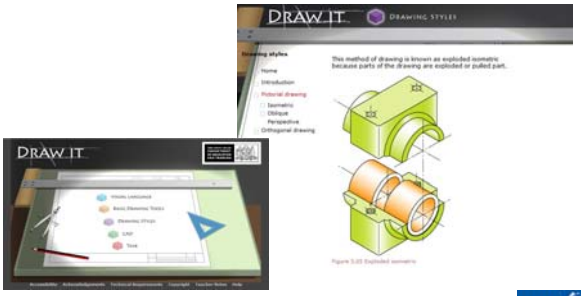
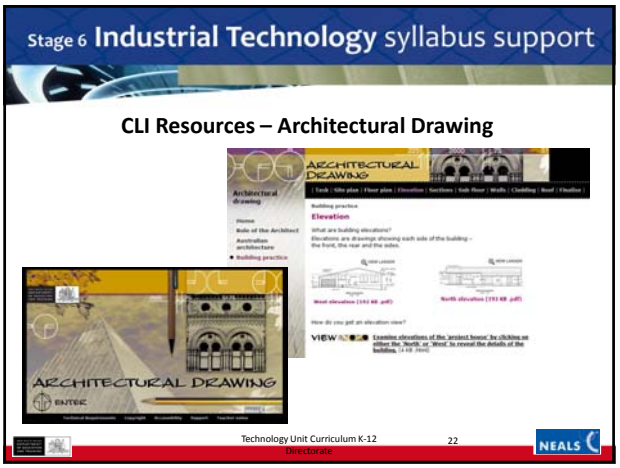
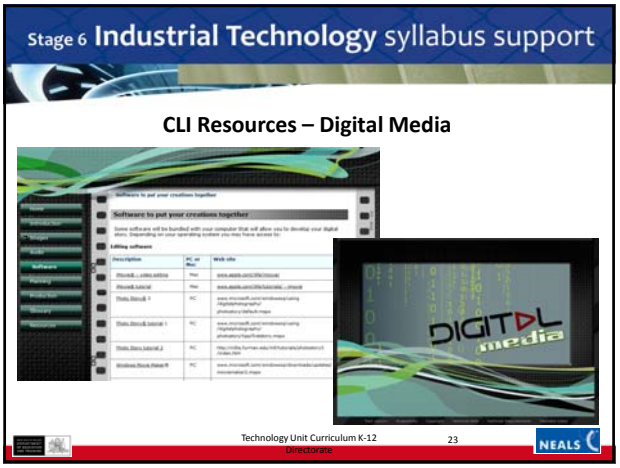
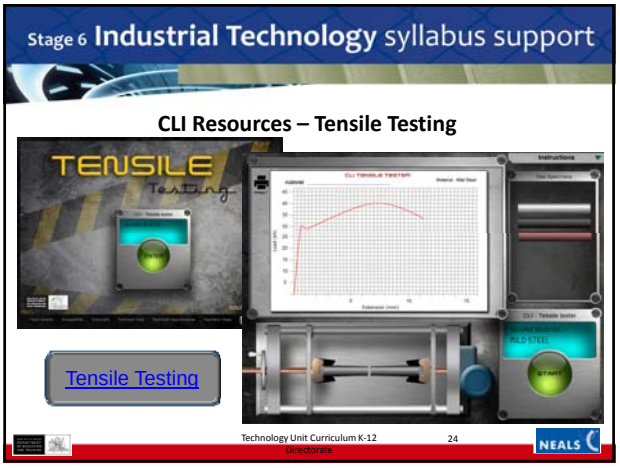
CLI Resources – Draw-it



Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology







Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

NSW HSC Online

Stage 6 Industrial Technology syllabus support

Flexible learning toolboxes

http://toolboxes.flexiblelearning.net.au

Stage 6 Industrial Technology syllabus support

Toolbox repository

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

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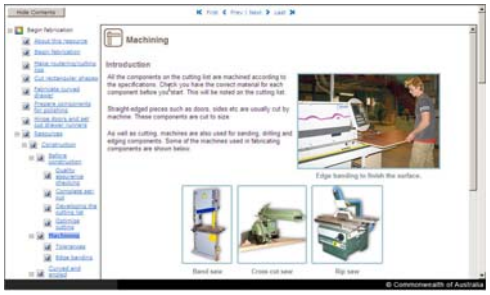
Stage 6 Industrial Technology syllabus support

Wall unit sample page



Stage 6 Industrial Technology syllabus support

Institute of Industrial Arts and Technology Education (IIATE)

provides support through resources released on its CD.

Stage 6 Industrial Technology syllabus support

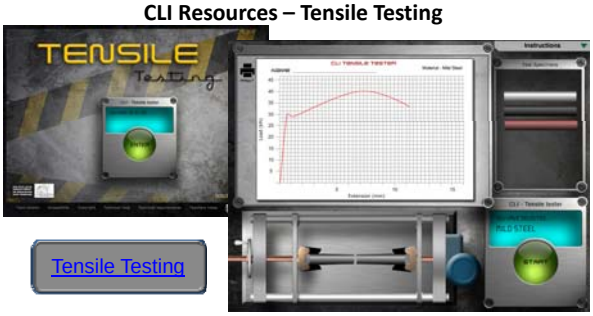
ESNET

- Esnet, the Engineering Studies network was originally established as a small group of teachers of Engineering Studies.
- Esnet is now a collective of over 1200 teachers of technology, in NSW and beyond. The list discussion focuses upon matters of interest to industrial arts teachers, primarily. Matters of equipment, technology and resources are frequently discussed.
  If you need an answer to a workshop question, Esnet can provide answers.

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

CLI Resources – Tensile Testing



Tensile Testing

Stage 6 Industrial Technology syllabus support

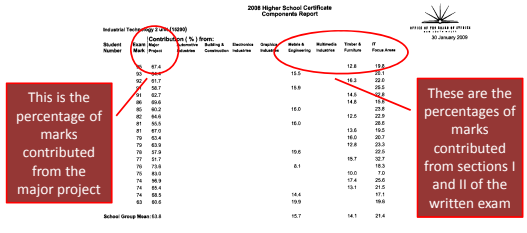
Activity 2a

Analysing results and using data

Stage 6 Industrial Technology syllabus support

The Components Report

Refer to the *HSC Components Report* on page 26 of your *Resource book*.



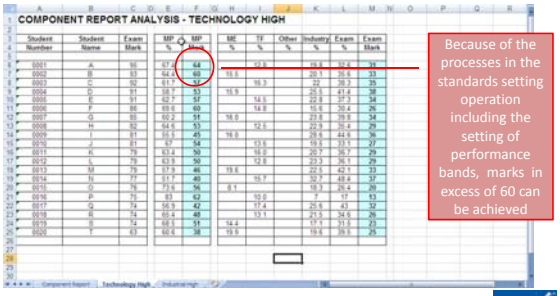
This is the percentage of marks contributed from the major project

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

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

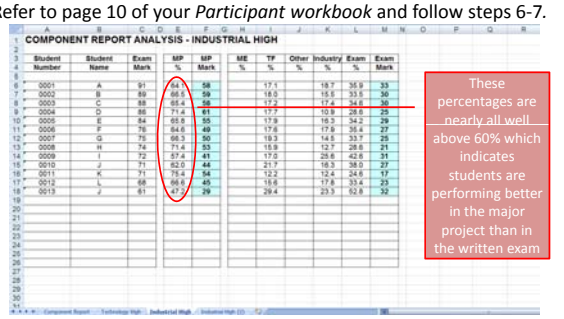
Refer to page 10 of your *Participant workbook* and follow steps 1-5.



Because of the processes in the standards setting operation including the setting of performance bands, marks in excess of 60 can be achieved

Stage 6 Industrial Technology syllabus support

Refer to page 10 of your *Participant workbook* and follow steps 6-7.



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

Stage 6 Industrial Technology syllabus support

Analysing SMART Data

The HSC data we are analysing is from the *Principals Results Analysis Package* which can be downloaded by schools.

Other data available includes the School Certificate and Naplan results.

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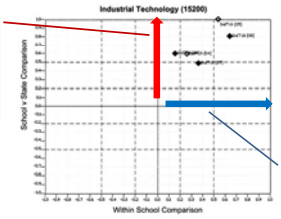
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

SMART data allows you to analyse trends in a KLA, subject or group of subjects. Here we have a comparison of the results in Industrial Technology over a period of 5 years.

This direction shows how well the cohort has performed compared with the rest of the state.

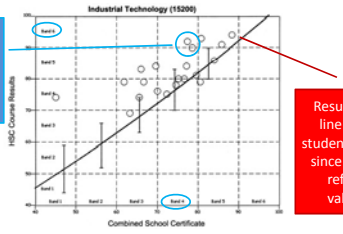


This direction shows how well the cohort has performed compared with the rest of the school.

Stage 6 Industrial Technology syllabus support

Below is a graph of the 2008 HSC results of an Industrial Technology cohort mapped against their results in the 2006 School Certificate (average of English, Mathematics, Science and HSIE).

These students improved from a band 4 in the SC to a band 6 in the HSC



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

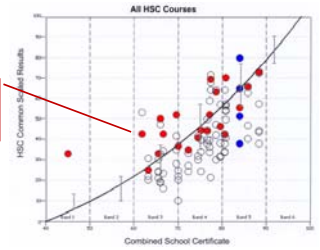
Stage 6 Industrial Technology syllabus support

School Measurement Assessment Reporting Toolkit (SMART) data is available in all schools.

EDOD

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

SMART data also allows you to analyse results for a subject compared with the achievements of the class in their other subjects.



Dots coloured red are the Industrial Technology results.

Activity 2b

Scope and sequence of assessment tasks

The changes to the syllabus requires that assessment tasks and schedules will need to be revised.

Preliminary assessment

Revised Syllabus		Old Syllabus	
Component	**Weighting**	**Component**	**Weighting**
Industry Study	15	Industry Study	20
Design	10	Design and Management	20
Management and Communication	20	Workplace Communication	10
Production	40	Industry-specific Content and Production	50
Industry Related Manufacturing Technology	15		
Marks	100	Marks	100

Earlier we looked at the changes to the Preliminary course components and weightings. These will need to be reflected in new assessment schedules.

Refer to page 13 of the *Participant's Workbook* and complete steps 1 to 3.

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

HSC assessment

Revised Syllabus		Old Syllabus	
Component	**Weighting**	**Component**	**Weighting**
Industry Study	15	Industry Study	20
Major Project	60	Design and Management	20
Industry Related Manufacturing Technology	25	Workplace Communication	10
		Industry-specific Content and Production	50
Marks	100	Marks	100

Earlier we looked at the changes to the HSC course components and weightings. These will need to be reflected in new assessment schedules.

Refer to page 13 of the *Participant's Workbook* and complete steps 4 and 5.

Stage 6 Industrial Technology syllabus support

HSC assessment schedules

	Components	Weighting %	Task 1 Design & Planning	Task 2 Project Management	Task 3 Half Yearly	Task 4 Folio Presentation	Task 5 Trial HSC
1.1 1.3 7.1 7.2	Industry Study	15			5 1.1 7.1 7.2		10 1.1 1.3 7.1 7.2
3.1 3.2 3.3 4.1 5.1 5.2 6.2	Major Project	60	15 3.1 3.2 3.3 5.1 5.2	15 3.1 3.2 3.3 4.1 5.1 5.2		30 3.3 4.1 5.1 5.2 6.2	
1.2 2.1 4.2 4.3 6.1	Industry Related Manufacturing Technology	25		5 4.2	10 2.1 4.3 6.1		10 1.2 4.3 6.1
		100	15	20	15	30	20

Sample schedule for new syllabus

Course Outcomes	Course Components	Syllabus Weightings	Task 1 Due Date T4 W6	Task 2 Due Date T1 W6	Task 3 Due Date T2 W2	Task 4 Due Date T3 W1	Task 5 Due Date T3 W8
H1.1, H1.2, H2.1, H7.1	Industry Study	20			10		10
H3.1, H3.2, H3.3	Design and Management	20	5	5		5	5
H5.1, H5.2	Workplace Communication	10			5	5	
H4.1, H4.2, H4.3, H6.1, H6.2	Industry-specific Content and Production	50	10	10	5	10	15
	Marks	100	15	15	20	20	30

Sample provided with old syllabus

Stage 6 Industrial Technology syllabus support

Assessment procedures

How does your school manage the following?

- Assessing across parallel classes.
- Assessing across different focus areas.
- Complying with the following statement from the syllabus:

> Aspects of the Major Project that are used for school-based assessment should not use the HSC examination marking criteria for internal assessment.

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

Assessment tasks

On page 35 of your *Resource book* is an example of an assessment task designed to assess four outcomes without using the major project marking guidelines.

Assessment tasks should include the outcomes being assessed, the task weighting, due date and include a marking rubric.

In this example the relevant syllabus content has been included.

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Activity 2c – Reciprocal teaching strategy

Become familiar with a teaching strategy that can help students to comprehend and respond to an article that uses complex language. This will assist students to prepare for the changes to the written exam.

Stage 6 Industrial Technology syllabus support

Activity 3a – A marker's perspective

Written Paper
Marking Process

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

Activity 3a – A marker's perspective

Major Project
Marking Process

Stage 6 Industrial Technology syllabus support

Practical marking guidelines
Design, Management and Communication

Outcomes assessed: H1.2, H2.1, H3.1, H3.2, H3.3, H4.2, H4.3, H5.1, H5.2, H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
Design and Management	
• Clarifies the intent of the major project by explaining clearly what is to be achieved and why	
• Describes a wide range of research conducted, which is relevant to the intent of the major project	
• Analyses and evaluates the development and modification of the major project design ideas	
• 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	
• Formulates a comprehensive and appropriate timeline and finance plan	17–20
• Demonstrates the use of a wide range of appropriate safe working practices through photographic or written evidence	
Workplace Communication	
• Provides critical evaluation of the major project, including in relation to the statement of intent, throughout the development and production	
• Assesses the relationship between the design, and modifications if applicable, materials, components and processes in the development of the major project	
• Demonstrates a wide range of communication techniques, including computer applications appropriate to the development of the major project	

Remember that these may change to accommodate syllabus revision

Stage 6 Industrial Technology syllabus support

Practical marking guidelines
Production

Outcomes assessed: H1.2, H2.1, H3.1, H3.2, H3.3, H4.1, H4.2, H4.3, H6.1, H6.2

MARKING GUIDELINES

Criteria	Marks
• Demonstrates very high quality in all aspects of the major project production	
• 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	
• Completed project relates closely to what was intended. Close links between actual construction processes, management and thorough research and planning are evident and clearly articulated	33–40
• Competently applies and uses a wide range of appropriate industrial processes and materials in the production of the major project	
• Uses a range of appropriate industrial technologies in the production of the major project	
• Demonstrates and critically evaluates how solutions to problems in major project production were addressed	

Remember that these may change to accommodate syllabus revision

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

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Applying the practical marking guidelines

Design, Management and Communication

On page 42 of the *Resource book*, the marking criteria for each mark range of the *Selection and Justification* section has been reproduced with the key wording highlighted.

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

Refer to page 19 of the *Participant's workbook* and complete steps 1 to 3. The samples for this section can be found on the *USB* in the *DMC Samples* folder.

Stage 6 Industrial Technology syllabus support

Selection and Justification samples

Sample 1 | Sample 2 | Sample 3

Finance Plan samples

Sample 1 | Sample 2 | Sample 3

Stage 6 Industrial Technology syllabus support

Activity 3b – Quality practical work

Selecting a Major Project

Question: How do students know whether the project is complex enough to achieve a band 5 or 6?

Answer: Look at the 2001 and 2002 Standards Packages, look at the Intech projects on the Institute CDs, answer a simple question – is the project of sufficient rigour to allow the candidate to fully satisfy the marking criteria for the major project?

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Supporting syllabus changes in Industrial Technology

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Question: Does a project have to be big or expensive to score high marks?

Answer: NO! The markers apply the marking criteria.

- quality of the 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

Technology Unit Curriculum K-12 Directorate 55 NEALS

Stage 6 Industrial Technology syllabus support

Consider the following project:

This student came 9th overall in the state in 2008. Making a jewellery box was obviously no disadvantage. The level of difficulty and skills are evident and the folio detailed the planning and processes.

Technology Unit Curriculum K-12 Directorate 56 NEALS

Stage 6 Industrial Technology syllabus support

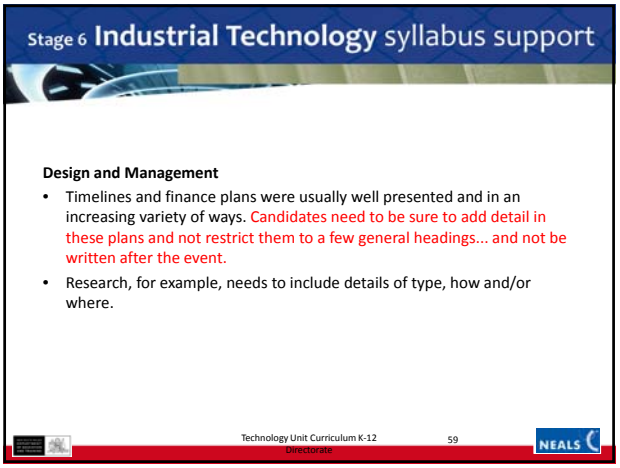
Advising students

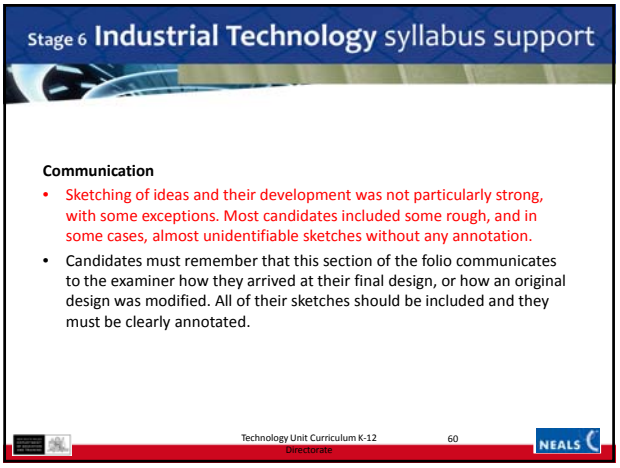
Don't be afraid to set limits or to say NO to a project.

- Every school has its own set of constraints – storage, tools and machines, access to outsourcing, delivery issues, marking venue.
- Every student has their own set of restrictions – their skill level, work/sport commitments, other subjects, work ethic.
- Every teacher has their own boundaries – class size, skill set, time constraints, other duties.

Technology Unit Curriculum K-12 Directorate 57 NEALS

Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology





Stage 6 Industrial Technology syllabus support
Supporting syllabus changes in Industrial Technology

Stage 6 Industrial Technology syllabus support

Production

- Most candidates were able to satisfactorily manage their time and resources to produce a finished project, albeit of varying quality. The quality of the major projects continues to improve, with far fewer candidates either not attempting the major project or presenting incomplete projects.
- Projects should also be of sufficient rigour to allow the candidate to fully satisfy the marking criteria for the major project.
- Weaker Multimedia Industries responses contained downloaded material from sources found on the internet. This is not a recommended practice and should be discouraged. Markers recognise the different standard of the downloaded material compared to a candidate's own work.

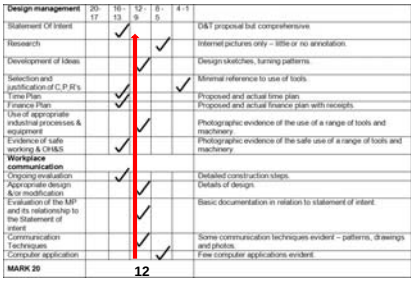
Stage 6 Industrial Technology syllabus support

Production

- Candidates should present as much supporting material as possible with their projects. Jigs, models, prototypes, preliminary sketches, working rods and all other material used during construction identifies a broader range of skills and techniques that may have otherwise been overlooked.
- Often, Multimedia Industries responses did not fully show how their projects evolved. They need to present the development of the project and not just the final product.

Stage 6 Industrial Technology syllabus support

Using the marking checklist



Design management	20-17	16-13	12-9	8-5	4-1	
Statement Of Intent		✓				D&T proposal but comprehensive
Research				✓		Internet pictures only – little or no annotation
Development of Ideas			✓			Design sketches, turning patterns
Selection and justification of C.P.R's		✓			✓	Minimal reference to use of tools
Time Plan		✓				Proposed and actual time plan
Finance Plan		✓				Proposed and actual finance plan with receipts
Use of appropriate industrial processes & equipment			✓			Photographic evidence of the use of a range of tools and machinery
Evidence of safe working & OH&S		✓				Photographic evidence of the safe use of a range of tools and machinery
Workplace communication						
Ongoing evaluation		✓				Detailed construction steps.
Appropriate design &/or modification			✓			Details of design
Evaluation of the MP and its relationship to the Statement of intent			✓			Basic documentation in relation to statement of intent
Communication Techniques			✓			Some communication techniques evident – patterns, drawings and photos
Computer application				✓		Few computer applications evident
MARK 20			**12**			

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Using the marking checklist

Production	40 - 33	32 - 25	24 - 17	16 - 9	8 - 1	
Quality of product		✓				Well constructed, 4 matched turned legs.
Evidence of a range of skill			✓✓			Range of skills – hand cut dovetails, turning.
Degree of difficulty						Moderate difficulty.
Links between planning & production		✓				Links well to drawings presented.
Evidence of industrial processes			✓			Uses a number of industrial processes.
Use of appropriate materials			✓			Use of a limited range of materials.
Use of industrial technologies			✓			Commercial hardware.
Evidence of solutions to problems in production					X	Not evident.
MARK 40		**24**				

Technology Unit Curriculum K-12 Directorate 64 NEALS

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Activity 3b – Simulated marking exercise

Occasional Table

Apply the marking guidelines to this project and the partial folio to arrive at a mark band for an aspect of the production.

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Marking the major project

The marking criterion *Evidence of a Range of Skills* can be marked using a combination of inspection of the physical project and reading the supporting design, management and communication folio.

In this exercise we will view the Photostory Occasional Table and by reading the document titled *Folio Extract - Occasional Table* on the *USB flash drive.*

A *marking checklist* can be found on page 41 of the *Resource book.*

Technology Unit Curriculum K-12 Directorate 66 NEALS

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Marking the major project

The project and folio are marked together, reading the folio including the following sections combined with a visual inspection of the project allows the examiner to arrive at a mark range for that criterion.

- Selection and justification
- Time plan
- Ongoing evaluation
- Appropriateness of design and modifications

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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

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Arriving at a mark range: Occasional Table

Marking Criteria
Selection and justification
Time plan
Ongoing evaluation
Appropriateness of design and modifications

Marking Criteria	40 -33	32 -25	24 -17	16 -9	8 -1
Evidence of a Range of Skills					

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Marking the major project

Select one of the other projects, review the photostory and the folio on the *USB flash drive* and use the same marking guidelines to arrive at a mark band for *Evidence of a Range of Skills.*

Chess Table

Workbench

Photostory Folio Photostory Folio

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Arriving at a mark range: Chess Table

Marking Criteria
Selection and justification
Time plan
Ongoing evaluation
Appropriateness of design and modifications

Marking Criteria	40 -33	32 -25	24 -17	16 -9	8 -1
Evidence of a Range of Skills					

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Arriving at a mark range: Workbench

Marking Criteria
Selection and justification
Time plan
Ongoing evaluation
Appropriateness of design and modifications

Marking Criteria	40 -33	32 -25	24 -17	16 -9	8 -1
Evidence of a Range of Skills					

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