HSC marking simulation videoconference: Industrial Technology

Technology Unit
Curriculum K-12 Directorate

NEW SOUTH WALES DEPARTMENT OF EDUCATION AND TRAINING
NEALS
Curriculum K-12

Video Conference overview

- Syllabus Changes
- Marking process – Written Examination
- Samples of Exam Responses
- Marking process – Major Project
- Applying the marking criteria to a major project
- Resources

Syllabus Changes

- A revised syllabus was introduced for the preliminary course in 2009 and will be examined for the first time in 2010.

- Significant changes have been made to syllabus content, assessment weightings and to the examination specifications.

- Details may be found at http://www.boardofstudies.nsw.edu.au/syllabus_hsc/industrial-technology.html

Marking process – written examination

- The marking of all student script has a number of quality assurance procedures built in, such as pilot marking, common scripts, check marking, double marking and the provision of a number of statistical reports.
- Section 1 - multiple choice questions are computer marked.
- Section 2 – focus area specific questions are marked by specialist markers for that focus area.
- Section 3 - industry study questions from all candidates are marked together by the same teams of markers.

Marking guidelines– written examination

- The markers strictly adhere to the marking guidelines during the marking process. Guidelines for the specimen examinations for the new examination format can be found on the Board of Studies website

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

Marking guidelines– written examination

Section I (10 marks)

- There will be objective response questions to the value of 10 marks specific to the focus area studied.

Section II (15 marks)

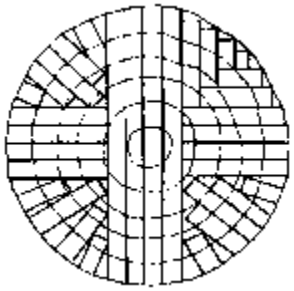
- There will be short-answer questions specific to the focus area studied.

Section III (15 marks)

- There will be an extended response question based on the Industry Study section of the syllabus.
- This question will be common to all SIX written examination papers.

Types of Questions to be found in Section 1

Name the following method used to convert logs into boards.



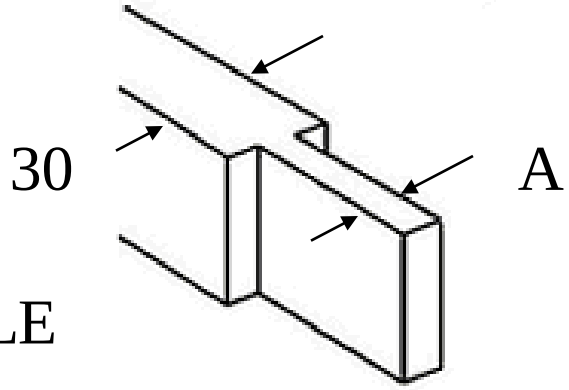
a. back sawing
b. live sawing
c. quarter sawing
d. through sawing

Correct answer is c

Source: Question 1, Section 1 (2010 HSC Specimen Paper)

Types of Questions to be found in Section 1

What should the dimension at A be for a common mortise and tenon joint?



NOT TO SCALE

a. 6 mm
b. 10 mm
c. 12 mm
d. 30 mm

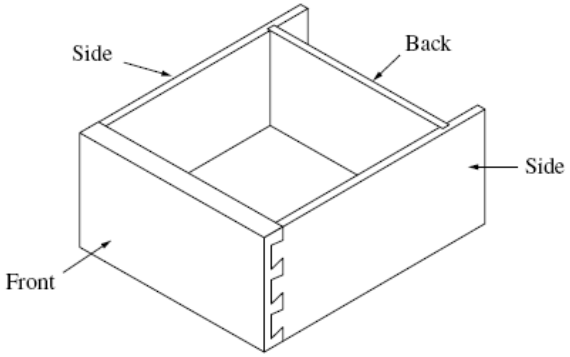
Correct answer is b

Width of tenon should be one third of the width of the timber

Source: Question 5, Section 1 (2010 HSC Specimen Paper)

Types of Questions to be found in Section 2

Describe a suitable industrial manufacturing process for the drawer shown. Include in your answer all checks to ensure that the finished drawer is flat and square.



Criteria	Marks
Provides characteristics and features of a suitable process to manufacture the drawer, including all quality checks	3
Provides characteristics and features of some steps in the manufacture of the drawer, including some quality checks	2
Lists some steps in the manufacture of the drawer or quality checks	1

Source: Question 1, Section 2(Specimen Paper)

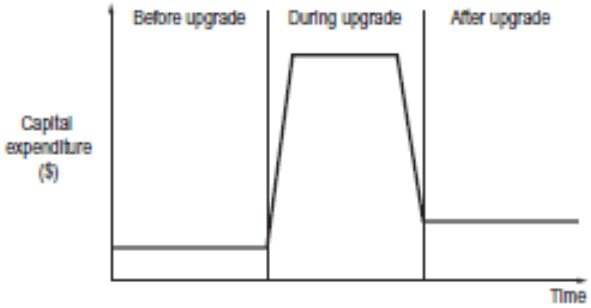
Types of Questions to be found in Section 3

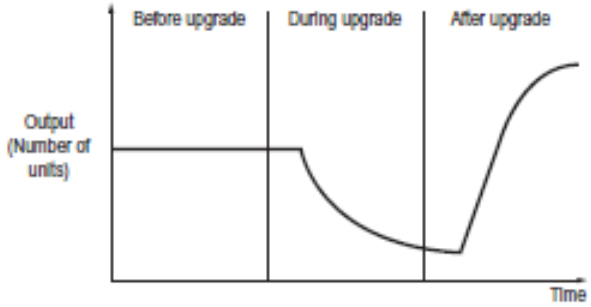
In response to increasing competition, the management of a company decides to upgrade their machinery and introduce new technology to stimulate productivity and improve efficiency.

The graphs below illustrate the company's capital expenditure and output before, during and after the introduction of new technologies. Use the graphs to answer part (a).

Source: 2004 HSC Examination question later used in local school year 12 half yearly examination

Types of Questions to be found in Section 3





(a). Explain the reasons for the changes in capital expenditure and output during and after the upgrade phases. **(5 marks)**

Source: Original question from local school year 12 half yearly examination

Sample response 1

(a) Explain the reasons for the changes in capital expenditure and output during and after the upgrade phases. **(5 marks)**

The reasons for changes in both capital expenditure and output are firstly expenditure would increase because the new machinery would cost alot ✓of money and would continue to cost more even after the upgrade because of possible higher Maintenance cost and a greater running cost. productivity and output would Drop During the ~~upgrade~~ upgrade because most of the machinery would be offline ✓and not in use. After the upgrade it would have an increase in output because the new machinery would be faster and more efficient ✓and more units could be produced over the same period of time.

Sample response 2

(a) Explain the reasons for the changes in capital expenditure and output during and after the upgrade phases. **(5 marks)**

Expenditure - This is higher during the upgrade due to the fact that during this time machines & equipment must be bought, along with the labour to install and issue these new machines. The expenditure is higher after the upgrade due to increased maintainance and increased electricity. As well as this costs are higher for training of employees.

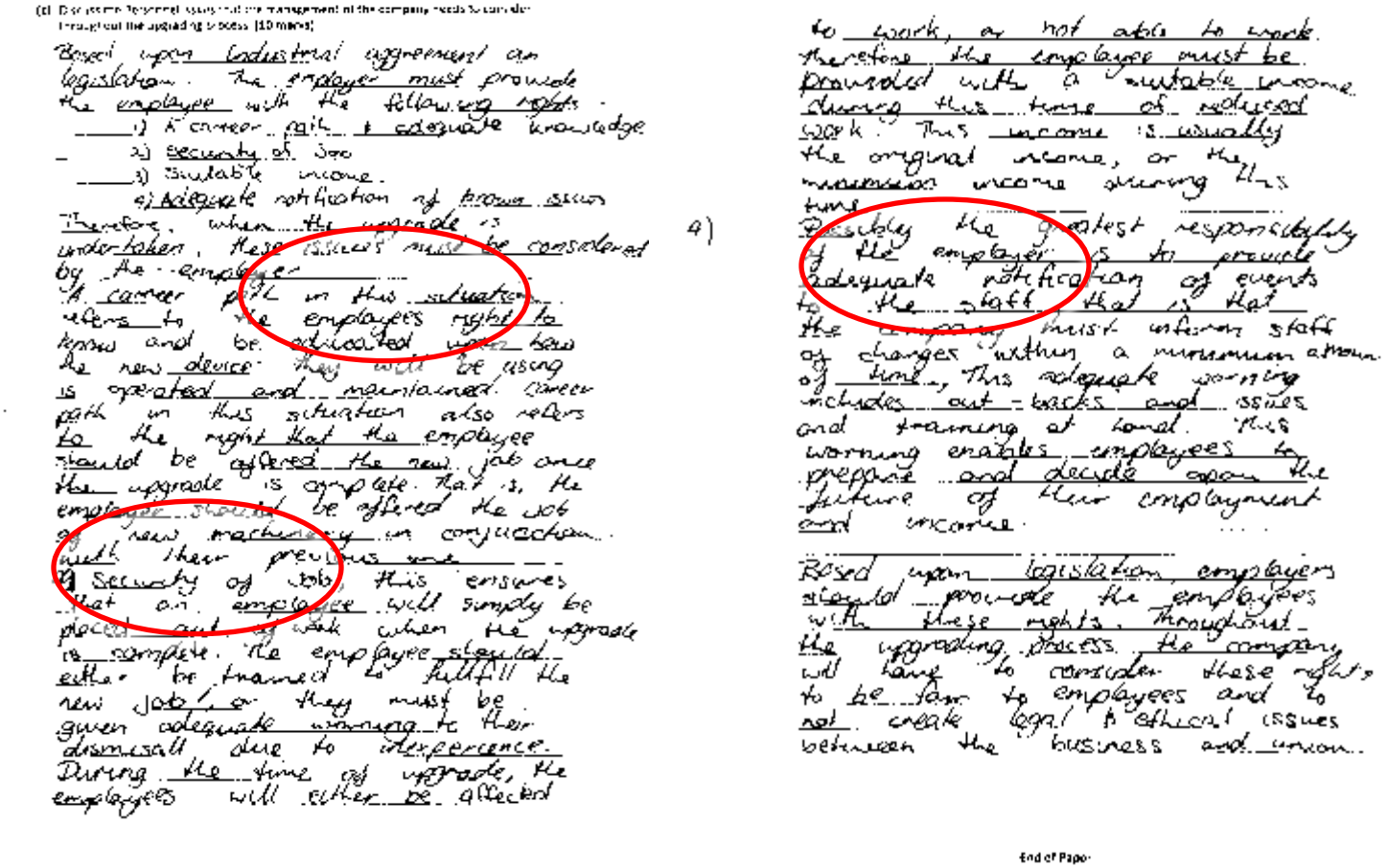
Output - Decreased output during the upgrade is due to the fact that machines are being installed in the business at the time. Leaving less production space for previous working methods

Increased production after upgrade is due to machines being much faster than previous te and providing an assembly line where processes are hast

Types of Questions to be found in Section 3

(b) Discuss the personnel issues that the management of the company needs to consider throughout the upgrading process. **(10 marks)**

Sample response 1



(c) Discuss the [illegible] management of the company needs to consider throughout the upgrading process. [10 marks]

Based upon industrial agreement and legislation. The employer must provide the employee with the following rights.

1) A career path + adequate knowledge
2) Security of Job
3) Suitable income.
4) Adequate notification of known issues

Therefore, when the upgrade is undertaken, these issues must be considered by the employer.

1) A career path in this situation refers to the employees right to know and be educated upon how the new device they will be using is operated and maintained. Career path in this situation also refers to the right that the employee should be offered the new job once the upgrade is complete. That is, the employee should be offered the job of new machinery in conjuction with their previous one.

2) Security of Job this ensures that an employee will simply be placed out of work when the upgrade is complete. The employee should either be trained to fulfill the new job, or they must be given adequate warning to their dismissall due to irreverence.

3) During the time of upgrade, the employees will either be affected to work, or not able to work. therefore the employee must be provided with a suitable income during this time of reduced work. This income is usually the original income, or the maximum income during this time.

4) Possibly the greatest responsibility of the employer is to provide adequate notification of events to the staff. That is that the employer must inform staff of changes within a minimum amount of time. This adequate warning includes out-backs and issues and training at hand. This warning enables employees to prepare and decide upon the future of their employment and incomes.

Based upon legislation employers should provide the employees with these rights throughout the upgrading process. The company will have to consider these rights to be law to employees and to not create legal & ethical issues between the business and union.

End of Paper

Sample response 2

(c) Discuss the Personnel issues that the management of the company needs to consider throughout the upgrading process. **(10 marks)**

Personal issues that management need to consider during the upgrade process are related to the safety of staff with new machinery, the possible retraining ✓ of staff and the employment of staff while the new machinery is being fitted.

Firstly the safety of staff is a major issue management should take all measures to ensure that the working environment is safe during and after the upgrading process this can be achieved by alerting staff of new potential hazards that arise in the upgrade process and the use of warning and protection signage. ✓

Another important issue is the possible retraining of staff. This is a problem because the new machinery may be more complex than older machinery and staff may need to be trained on how to use it and safely when using the machinery. A good time for this to take place would be while the new machinery is being installed ✓ this is because workers will not be able to work if the factory is being fitted out so instead of being paid service leave while the machines are installed they could be retrained in the use of the new machinery. ✓

The employment of staff is another problem that could arise ✓ Management must consider what positions can still be operated while the upgrade is taking place ✓ and whether to keep sections of the factory operating during the upgrade. A possible solution to this problem was highlighted in the previous paragraph and that would probably be the best option.

In conclusion the management faces problems with the employment, training and safety of their staff during the upgrade and every measure should be taken that all these issues are dealt with.

End of Paper

Practical Examination marking process

- The major practical projects are marked at the school by a team of two markers and often a senior marker will also visit the school.
- All projects are marked independently by each marker and the candidate is given the average mark.
- It is important that you display your project to show how it is to be used for example by making up a bed with mattress and bedding.
- All test materials and jigs should also be presented as proof of your testing and problem solving.
- Consider displaying drawings on display boards where they can be easily viewed.

Practical Examination marking process

- The markers will spend time checking the certification forms where students declare which work has been completed by others according to the requirements of All My Own Work.
- If necessary they may ask for some projects to be demonstrated. This will often apply to automotive, multimedia and electronics projects.
- It is crucial that your project is set up properly and you have tested that it will work correctly otherwise it could cost you valuable marks.
- It is expected that multimedia projects will be set up on individual computers.

Practical Examination marking process

- The markers will inspect the project, looking at the construction methods.
- The folio will be marked in conjunction with the practical project .
- As the markers consider the folio in relation to the project judgements of the quality of each section and note that information on the checklist. They refer to the marking guidelines to assist them in making these judgements.
- Within the allocated marking time for each project all presented work will be marked. If there is something that you particularly want the markers to read then make it obvious.
- A mark of 20 will be allocated to the folio.

Practical Examination marking process

- The markers will carefully inspect the project and make judgements according to the marking guidelines.
- Markers refer to additional documentation developed during the marker briefing process to ensure that candidates receive appropriate marks and to maintain consistency across the state.
- Markers will allocate a mark out of 40 for the production of the major project.

Major Project Folio Marks

Sample 1

Design management	20-17	16 - 13	12 - 9	8 - 5	4 -1	
Statement Of Intent					X	Incomplete description of project intent.
Research				X		Pictures from internet, photocopies without annotation
Development of Ideas			X			Very simple sketches.
Selection and justification of C,P,R's			X			Selection of joints.
Time Plan						Not evident.
Finance Plan						Not evident.
Use of appropriate industrial processes & equipment					X	
Evidence of safe working & OH&S					X	Reference to PPE
Workplace communication						
Ongoing evaluation						Not evident.
Appropriate design &/or modification		X				Details of designs evident.
Evaluation of the MP and its relationship to the Statement of intent						Not evident.
Communication Techniques					X	Very low range of techniques.
Computer application					X	WP only.
MARK 20			4			

Major Project Folio Marks

Sample 2

Design management	20-17	16 - 13	12 - 9	8 - 5	4 -1	
Statement Of Intent			X			Brief description of project.
Research				X		Some internet pictures.
Development of Ideas				X		A few simple sketches
Selection and justification of C,P,R's		X				Describes selection only of C,P,R's.
Time Plan				X		Insufficient detail – only 5 construction steps.
Finance Plan		X				Total for each part only.
Use of appropriate industrial processes & equipment				X		Refers to use of Mitre Saw and photos of Biscuit Cutter.
Evidence of safe working & OH&S			X			Use of PPE evident in 2 photos.
Workplace communication						
Ongoing evaluation				X		Reference to joint quality.
Appropriate design &/or modification						Not evident.
Evaluation of the MP and its relationship to the Statement of intent			X			Basic documentation relating finished project to statement of intent.
Communication Techniques			X			Some communication techniques.
Computer application				X		Few computer applications.
MARK 20			**10**			

Major Project Folio Marks

Sample 3

Design management	20-17	16 - 13	12 - 9	8 - 5	4 -1	
Statement Of Intent	X					Very clear statement of intent.
Research		X				Good range of relevant research.
Development of Ideas		X				Some idea development.
Selection and justification of C,P,R's		X				Selects and justifies a range of components, processes and materials.
Time Plan			X			Time line lacks detail in areas.
Finance Plan	X					Very detailed budget and finance plan.
Use of appropriate industrial processes & equipment		X				Clear evidence in record of procedures.
Evidence of safe working & OH&S		X				Lists safety issues, photographs of personal safety equipment.
Workplace communication						
Ongoing evaluation		X				Detailed construction steps.
Appropriate design &/or modification	X					Details design modifications.
Evaluation of the MP and its relationship to the Statement of intent	X					Good evaluation in relation to statement of intent.
Communication Techniques	X					Very good workshop drawings, good range evident.
Computer application	X					A range of computer applications evident.
MARK 20			**16**			

Major Project Production Marks

Sample 1

Production	40 -33	32 - 25	24 - 17	16 -9	8 -1	
Quality of product					X	Very poor quality of construction, unfinished.
Evidence of a range of skill				X		Minimal level of difficulty.
Degree of difficulty				X		Minimal difficulty – widening & dowel joints – poor quality.
Links between planning & production				X		Links not clear.
Evidence of industrial processes					X	Use of router, drill.
Use of appropriate materials					X	Limited range of basic materials.
Use of industrial technologies					X	Limited range of technologies.
Evidence of solutions to problems in production						Not evident.
MARK 40			7			

Major Project Production Marks

Sample 2

Production	40 -33	32 - 25	24 - 17	16 -9	8 -1	
Quality of product				X		Basic quality of work.
Evidence of a range of skill			X			Simple jointwork only.
Degree of difficulty			X			A project of moderate difficulty.
Links between planning & production					X	Links are not evident – no drawings.
Evidence of industrial processes				X		Uses some basic industrial technologies.
Use of appropriate materials				X		Use of pine and plywood.
Use of industrial technologies				X		Little evidence – use of hardware.
Evidence of solutions to problems in production						Not evident.
MARK 40			**14**			

Major Project Production Marks

Sample 3

Production	40 -33	32 -25	24 -17	16 -9	8 -1	
Quality of product			X			Substantial quality – well finished.
Evidence of a range of skill		X				Substantial difficulty – dovetailed carcase and drawers.
Degree of difficulty		X				Substantial project, well managed.
Links between planning & production				X		Few drawings – relates loosely to what was intended.
Evidence of industrial processes			X			Use of a limited range of common processes.
Use of appropriate materials			X			Limited range – solid pine and plywood only.
Use of industrial technologies						Limited range - cabinet hardware,
Evidence of solutions to problems in production			X			Not evident.
MARK 40			**22**			

Major Project Production Marks

Sample 4

Production	40 -33	32 -25	24 -17	16 -9	8 -1	
Quality of product		X				Well constructed, 4 matched turned legs.
Evidence of a range of skill			X			Range of skills – hand cut dovetails, turning.
Degree of difficulty			X			Moderate difficulty.
Links between planning & production		X				Links well to drawings presented.
Evidence of industrial processes			X			Uses a number of industrial processes.
Use of appropriate materials			X			Use of a limited range of materials.
Use of industrial technologies			X			Commercial hardware.
Evidence of solutions to problems in production						Not evident.
MARK 40			**27**			

Major Project Production Marks

Sample 5

Production	40 -33	32 -25	24 -17	16 -9	8 -1	
Quality of product	X					High quality of work.
Evidence of a range of skill	X					A range of practical processes undertaken.
Degree of difficulty	X					Difficult project, completed well.
Links between planning & production			X			Working drawings not sufficient to construct project.
Evidence of industrial processes	X					Good range of industrial processes documented.
Use of appropriate materials	X					Good description and use of suitable materials.
Use of industrial technologies		X				Appropriate technologies utilised.
Evidence of solutions to problems in production		X				Good level of problem solving.
MARK 40			**34**			

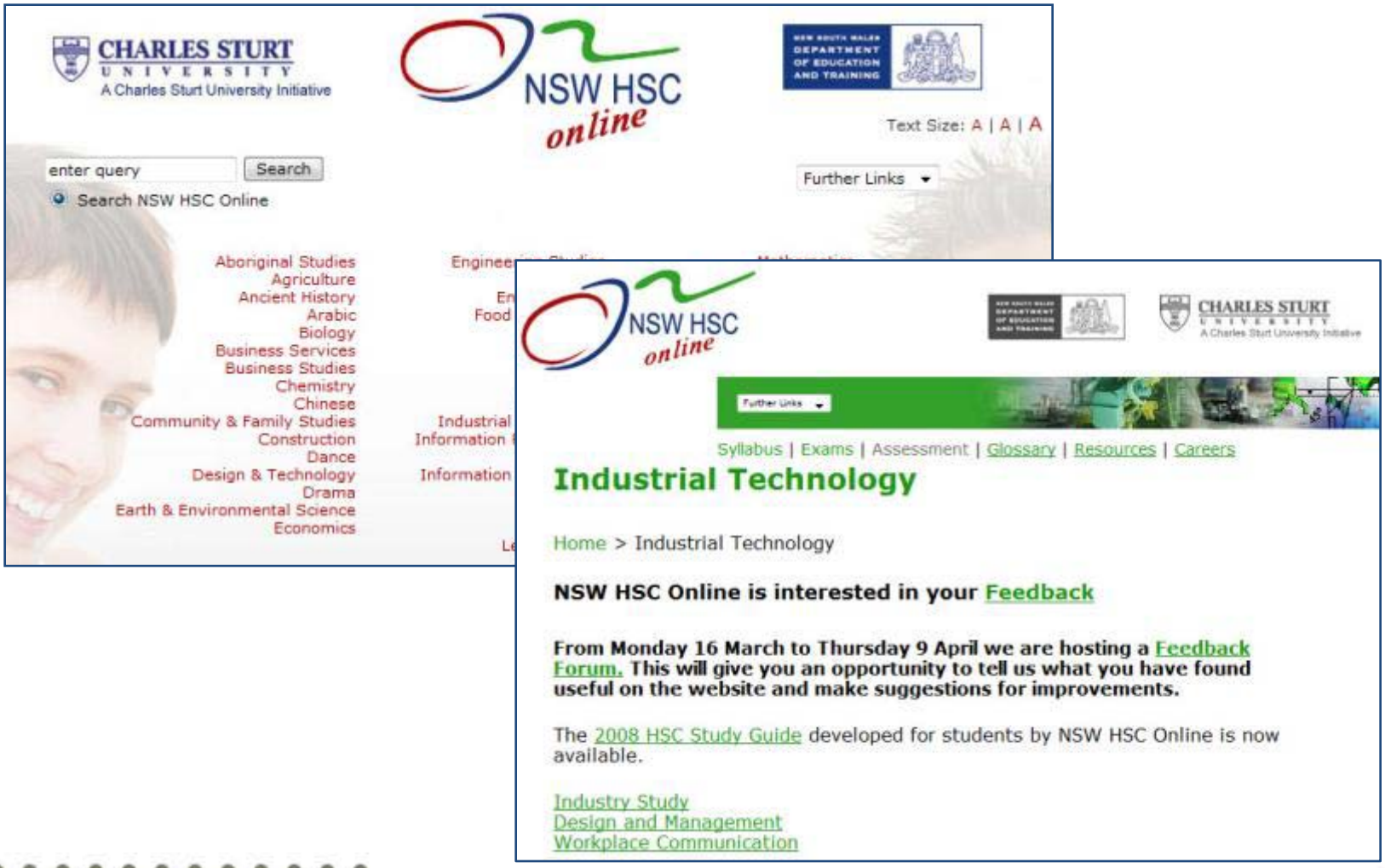
Resources:

You may find the following websites useful:

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

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

Resources: NSW HSC Online



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