Preparing an assessment program for Design and Technology

Technology Unit
Curriculum Support Directorate
Support for the NEW HSC

Preparing an assessment program – Design and Technology

The following is a set of steps that will assist in developing an assessment program for your teaching and learning program. This process is suitable for use with the preliminary or HSC course.

Step 1: Map the course outcomes

All course outcomes are to be included in the assessment program. Teachers need to plan carefully to ensure they provide sufficient opportunities for students to achieve the outcomes and for the teacher to gather and record evidence so that they are able to provide feedback to each student about his or her achievement of the outcomes.

As part of the process of developing teaching programs and assessment programs, it is important to map the syllabus outcomes of the course against the course content.

The relationship between outcomes and content is different in each of the eight technology syllabuses.

The grids shown below map the Preliminary and HSC course outcomes of the Design and Technology syllabus against the content.

Preliminary Outcome	Content
P1.1	*
P2.1	*
P2.2	*
P3.1	*
P4.1	*
P4.2	*
P4.3	*
P5.1	*
P5.2	*
P5.3	*
P6.1	*
P6.2	*

Design and Technology Preliminary course outcomes mapped against content

HSC Outcome	Content
H1.1	*
H1.2	*
H2.1	*
H2.2	*
H3.1	*
H3.2	*
H4.1	*
H4.2	*
H4.3	*
H5.1	*
H5.2	*
H6.1	*
H6.2	*

Design and Technology HSC course outcomes mapped against content

Mapping of the outcomes and content is an important step in programming. In instances where an outcome is addressed once only in the teaching program, teachers will need to ensure they provide ample opportunity for students to work toward achieving, and demonstrating achievement of the outcome.

Where an outcome is included more than once, teachers will still need to ensure that the outcome is included at the relevant points in their teaching program. However they will have more opportunities to build student learning experiences and gather evidence for assessing student achievement of that outcome.

Step 2: Brainstorm possible tasks

For each outcome, brainstorm and research the range of appropriate tasks that could be used in Design and Technology . This may assist you to identify which outcomes could be assessed together in one assessment task.

The table below can be used to brainstorm tasks most suited to particular outcomes.

Preliminary Outcome	Assessment tasks and strategies
P1.1 examines design theory and practice, and considers the factors affecting designing and producing in design projects	
P2.1 identifies design and production processes in domestic, community, industrial and commercial settings	
P2.2 explains the impact of a range of design and technology activities on the individual, society and the environment through the development of projects	
P3.1 investigates and experiments with techniques in creative and collaborative approaches in designing and producing	
P4.1 uses design processes in the development and production of design solutions to meet identified needs and opportunities	
P4.2 uses resources effectively and safely in the development and production of design solutions	
P4.3 evaluates the processes and outcomes of designing and producing	
P5.1 uses a variety of management techniques and tools to develop design projects	
P5.2 communicates ideas and solutions using a range of techniques	
P5.3 uses a variety of research methods to inform the development and modification of design ideas	
P6.1 investigates a range of manufacturing and production processes and relates these to aspects of design projects	
P6.2 evaluates and uses computer-based technologies in designing and producing	

An example of the assessment tasks suggested by one group of teachers for the preliminary course is shown below.

Preliminary Outcome	Assessment tasks and strategies
P1.1 examines design theory and practice, and considers the factors affecting designing and producing in design projects	• internet search • oral report • written report

		• industry visit • design project/process • exam • case study • analysis
P2.1	identifies design and production processes in domestic, community, industrial and commercial settings	• design project • case study • industry visit/written report
P2.2	explains the impact of a range of design and technology activities on the individual, society and the environment through the development of projects	• research project • case study • examination
P3.1	investigates and experiments with techniques in creative and collaborative approaches in designing and producing	• project • log/diary • oral reporting/presentation
P4.1	uses design processes in the development and production of design solutions to meet identified needs and opportunities	• project / folio • survey / execution / collation
P4.2	uses resources effectively and safely in the development and production of design solutions	• project / folio • observation
P4.3	evaluates the processes and outcomes of designing and producing	• project folio – focus on evaluation/analysis • comparative essay • testing
P5.1	uses a variety of management techniques and tools to develop design projects	• project / folio • observation
P5.2	communicates ideas and solutions using a range of techniques	• folio / product • class presentation
P5.3	uses a variety of research methods to inform the development and modification of design ideas	• research • folio • case study • industry
P6.1	investigates a range of manufacturing and production processes and relates these to aspects of design projects	• folio / product development • examination
P6.2	evaluates and uses computer-based technologies in designing and producing	• folio / product development

The table below can be used to brainstorm tasks most suited to particular outcomes.

HSC Outcome	Assessment tasks and strategies
H1.1 critically analyses the factors affecting design and the development and success of design projects	
H1.2 relates the practices and processes of designers and producers to the major design project	
H2.1 explains the influence of trends in society on design and production	
H2.2 evaluates the impact of design and innovation on society and the environment	
H3.1 analyses the factors that influence innovation and the success of innovation	
H3.2 uses creative and innovative approaches in designing and producing	
H4.1 identifies a need or opportunity and researches and explores ideas for design development and production of the major design project	
H4.2 selects and uses resources responsibly and safely to realise a quality major design project	
H4.3 evaluates the processes undertaken and the impacts of the major design project	
H5.1 manages the development of a quality major design project	
H5.2 selects and uses appropriate research methods and communication techniques	
H6.1 justifies technological activities undertaken in the major design project and relates these to industrial and commercial practices	
H6.2 critically assesses the emergence and impact of new technologies, and the factors affecting their development	

An example of the assessment tasks suggested by one group of teachers for the HSC course is shown below.

HSC Outcome	Assessment tasks and strategies
H1.1 critically analyses the factors affecting design and the development and success of design projects	• Design case study • MDP • Examination/Test • Debate/Collaborative
H1.2 relates the practices and processes of designers and producers to the major design project	• Comparative Essay • Examination/Test
H2.1 explains the influence of trends in society on design and production	• Case Study – Innovation • Examination/Test
H2.2 evaluates the impact of design and innovation on society and the environment	• MDP – written presentation • Environmental case study • Examination
H3.1 analyses the factors that influence innovation and the success of innovation	• Case Study – Innovation • Examination/Test
H3.2 uses creative and innovative approaches in designing and producing	• MDP • Visit Powerhouse & report • Case study • Positive / negative analysis
H4.1 identifies a need or opportunity and researches and explores ideas for design development and production of the major design project	• MDP – project proposal • Experimentation • Execution of Market research
H4.2 selects and uses resources responsibly and safely to realise a quality major design project	• MDP – observation • Written/oral report • Analysis • Collaborative assessment of peer MDP
H4.3 evaluates the processes undertaken and the impacts of the major design project	• MDP • Report / research
H5.1 manages the development of a quality major design project	• MDP – Project Diary/Log • Observation • Setting and meeting T/A plan
H5.2 selects and uses appropriate research methods and communication techniques	• MDP • written report / class presentation/case study
H6.1 justifies technological activities undertaken in the major design project and relates these to industrial and commercial practices	• Comparative Essay • MDP • Examination
H6.2 critically assesses the emergence and impact of new technologies, and the factors affecting their development	• Case Study – Innovation • Examination/Test

Step 3: Review assessment requirements in Board syllabuses

Refer to *Assessment components, weightings and tasks in* section 12, *Assessment and Reporting*, of the syllabus.

Draw up a table which allows the teacher to map how each assessment task addresses the syllabus outcomes, content, and assessment components and weightings. Below are shown sample tables for each course. Steps 4-8 will assist you to complete the assessment table.

Preliminary course Syllabus components, weightings and related outcomes	Task1: Outcomes: Content: Date:	Task2: Outcomes: Content: Date:	Task3: Outcomes: Content: Date:	Task4: Outcomes: Content: Date:	Task5: Outcomes: Content: Date:
Design Projects 50%					
Presentation of research 25%					
Test type tasks 25%					
Total 100%					

Design and Technology Preliminary course sample assessment table

HSC course Syllabus components, weightings and related outcomes	Task1: Outcomes: Content: Date:	Task2: Outcomes: Content: Date:	Task3: Outcomes: Content: Date:	Task4: Outcomes Content: Date:	Task5: Outcomes Content: Date:
Innovation and emerging technologies 40%					
Designing and producing 60%					
Total 100%					

Design and Technology HSC course sample assessment table

In the top line of each table:

- *Task* refers to the name of the task
- *Date* refers to the scheduled date the task is due
- *Outcomes* refers to the syllabus outcomes addressed by the task and should have the number of each outcome listed
- *Content area* refers to the syllabus content area addressed by the task.

HSC course Syllabus components, weightings and related outcomes	Task1: Outcomes: Content: Date:	Task2: Outcomes: Content: Date:	Task3: Outcomes: Content: Date:	Task4: Outcomes Content: Date:	Task5: Outcomes Content: Date:
Innovation and emerging technologies – a case study 20%					
Innovation and emerging technologies – 20%					
Designing and producing 60%					
Total 100%					

Design and Technology HSC course sample assessment table

In the top line of each table:

- *Task* refers to the name of the task
- *Date* refers to the scheduled date the task is due
- *Outcomes* refers to the syllabus outcomes addressed by the task and should have the number of each outcome listed
- *Content area* refers to the syllabus content area addresses by the task.

Step 4: Cluster or group the course outcomes

Design and Technology has 12 outcomes for the preliminary and 13 outcomes for the HSC course. If all outcomes are to be addressed in an assessment task, then most, if not all tasks will need to assess a number of outcomes. This is best achieved by clustering or grouping the outcomes.

Steps 1 and 2 assist in this process. Outcomes may be clustered together because they are best assessed by a similar type of task. For example, some outcomes lend themselves better to research and analysis tasks whilst others may be more suited to demonstrations, experimentations or other forms of practical work.

Each clustered group of outcomes will form the basis of one task.

- Is the number of tasks manageable(3-5)?
- Are all course outcomes being addressed?

Step 5: Select the task type.

Decide on the most appropriate task type to use for each cluster of outcomes.

Ask the following questions when completing this step.

- What type of task will best assess student achievement of these outcomes?
- Does the task type give your students the best chance to demonstrate achievement of the outcome?
- Is a range of task types being used across the course to allow students to demonstrate achievement of outcomes in a variety of ways?
- Do the task types fit within the overall teaching and learning program?

Step 6: Outline each of the assessment tasks

At this stage in the development of an assessment program, it is important to develop an outline of the task. The detailed task description and marking scheme do not need to be completed. In your task outline you will need to ensure that:

- a manageable number of outcomes is being assessed
- the task chosen will enable the outcomes to be assessed effectively
- the task will measure what you want it to assess
- students will have the best opportunity to demonstrate what they know and can do.

Insert the information regarding each of the tasks into an assessment grid such as that shown under step 3.

Step 7 Allocate the weighting for each task

Insert the weighting information regarding each task into the assessment program.

- Does each task weighting follow the weightings required by the syllabus and the relative importance of the task?
- Is each task weighted at between ten and forty per cent?

Add each column across and down to ensure that the total value of the task is 100% and the value of each component is appropriate.

Step 8: Schedule each task

Decide on the timing of each task. Consider:

- the school calendar of events
- the amount of teaching time needed to ensure that students have had the opportunity to achieve the outcomes before being assessed
- the capacity of all classes in the school that are undertaking the same course to be assessed with the same or equivalent tasks.

Insert the date for each task into the assessment program.

Step 9: Check that your assessment program meets all requirements

Does your internal assessment program for the HSC Design and Technology course:

- include 3-5 tasks?
- include a range and balance of task types?
- address all course outcomes?
- focus on a manageable number of specified outcomes in each task?
- adequately reflect the practical intent of the syllabus?
- reflect syllabus assessment components and weightings of
    - innovation and emerging technologies, a case study – 20%
    - innovation and emerging technologies, other task – 20%
    - designing and producing – 60%
- weight individual tasks between 10% and 40%?
- schedule tasks so that students have ample opportunities to achieve the specified outcomes before being assessed in the task?
- schedule tasks so that later tasks carry more weight?

Step 10: Develop each assessment task and marking guidelines

When designing and fully developing each assessment task it is important to consider the following key questions.

- Does the task fit into the overall teaching and learning program?
- Does each task take place after students have had structured learning experiences to achieve the specified outcomes?
- Does it follow the weightings or components required by the syllabus?
- What outcomes will the task assess?
- Does this type of task best assess student achievement?
- Will I be able to mark the task to reflect student achievement of the outcomes assessed by the task?
- Does the wording of the task provide clear directions to students about what they are expected to do?
- Will the students understand the language?
- Is the language consistent with the Board of Studies glossary of keywords?
- Does the task allow students to show a range of achievement levels?

When developing the marking scheme it is important to consider the following questions.

- Does my marking scheme address the range of outcomes addressed in the task?
- Do the marking guidelines reflect the information provided to students about the task?
- Does my marking scheme indicate the marks to be awarded for different levels of performance?
- Is the marking scheme feasible to apply and can it be used fairly and equitably?
- Do the marking guidelines provide feedback to students about their standard of performance and indicate areas for improvement?

In reviewing how the task will be presented to students you need to consider the following.

- Have I provided students with clear information and expectations about the task?
- Do the students know what they have to do to be awarded marks?

When considering the type of feedback that will be provided to students by the task, you need to consider the following.

- Does the task provide opportunities for feedback to students which will assist them in their learning?
- In what form will feedback be provided to the students?
- Will the task provide useful feedback on the effectiveness of the teaching program?