



Government of **Western Australia**
School Curriculum and Standards Authority

SAMPLE ASSESSMENT TASKS

MATERIALS DESIGN AND TECHNOLOGY
GENERAL YEAR 12

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Sample assessment task

Materials Design and Technology – General Year 12

Task 1 – Unit 3

Assessment type: Design

Conditions

Period allowed for completion of the task: two weeks

Task weighting

5% of the school mark for this pair of units

Design project one

(27 marks)

Students are to use a design process to design a product using a combination of different materials. Students are to investigate different materials within the context and/or from outside the designated context.

What you need to do

Develop the first part of a design portfolio, including all of the following:

1. Acknowledge all sources of information, using either in-text referencing or an appropriately set out reference list (3 marks)
2. statements of problem and intent (3 marks)
3. investigate (using available resources):
 - design criteria, design needs
 - limitations
 - available materials and equipment
 - time available
 - your skill level/skills you need to develop
 - safety considerations
 - other (5 marks)
4. apply the design fundamentals to research:
 - existing designs (correctly reference all pictures and information)
 - different materials that are available to you
 - materials based on the relationship of material properties to design fundamentals: aesthetics, function, safety and cost (4 marks)
5. identify which materials and finishes could be used to construct your project (4 marks)
6. devise and develop concept design sketches incorporating the elements of design:
 - adapt design ideas using annotated graphics and sketches (8 marks)

What needs to be submitted for assessment	Due date
<input type="checkbox"/> Statements of problem and intent	
<input type="checkbox"/> Research on existing ideas/concepts	
<input type="checkbox"/> Investigation of materials and finishes	
<input type="checkbox"/> Choice of materials and finishes	
<input type="checkbox"/> Annotated concept sketches showing concept development	

Marking key for sample assessment task 1 – Unit 3

Design portfolio – statement, investigate and devise	Maximum possible mark	Allocated mark
Referencing <ul style="list-style-type: none"> regular, correct in-text referencing and/or appropriately set out reference list limited referencing or no reference list provided 	2–3 0–1	/3
Provides statements outlining situation or problem defining a need or purpose for the product: <ul style="list-style-type: none"> includes clear and detailed statements about intended function, need, uses and environment includes general statements about the likes and dislikes covers broad areas of the design problem in limited general terms only 	3 2 1	/3
Provides information about existing products: <ul style="list-style-type: none"> carefully selected number of different examples and images, with source referencing, using the design fundamentals to make detailed comparisons comparisons between a carefully selected number of different examples and images against the design fundamentals a number of different examples with notes describing the differences a selection of ideas of a single example with limited annotation about likes and dislikes collection of dissimilar images and few notes 	5 4 3 2 1	/5
Provides referenced information on a variety of different materials, using internet, print media and other sources: <ul style="list-style-type: none"> detailed comparisons, using design considerations, between a selected number of different materials, supported by images a number of different examples with notes describing the differences a selection of ideas of a single material with some notation about likes/dislikes collection of materials, dissimilar images and few notes 	4 3 2 1	/4
Provides information about choice of materials and finishes: <ul style="list-style-type: none"> logical choice and justification of different materials, with appropriate selection of a finish combination of different materials, with suitable choice of a finish limited information about choice of materials, some notation about likes/dislikes limited choice of materials and few notes of explanation 	4 3 2 1	/4
Completes sketches of possible shapes, joins, specific features, likely dimensions and notes on likely finishes: <ul style="list-style-type: none"> detailed, well-proportioned sketches showing progression from concept ideas to specific ideas; parts, showing relevant joining methods with appropriate specific dimensions; other materials and finishes well-shaped sketches that show concept ideas, including other materials, joining and appropriate overall dimensions sketches that show development of mainly a single concept idea, some materials and joining, some dimensioning collection of dissimilar sketches, limited design progression and few notes 	7–8 5–6 3–4 1–2	/8
	Total	/27

Sample assessment task

Materials Design and Technology – General Year 12

Task 3 – Unit 3

Assessment type: Design

Conditions

Period allowed for completion of the task: three weeks

Task weighting

5% of the school mark for this pair of units

Devising project one

(23 marks)

Students are to use a design process to prepare drawings, patterns or templates, and then develop a production plan to manufacture the product.

What you need to do

Develop the second part of a design portfolio, including the following:

1. prepare and present a three dimensional rendered sketch of final solution, including any likely applied finish (6 marks)
2. create simple working drawing/s or develop a template or select pattern:
 - use conventions suitable to context
 - select and show methods of joining (6 marks)
3. select and list materials:
 - calculate simple cutting/costing list/s (6 marks)
4. produce a basic plan and timeline for production (5 marks)

What needs to be submitted for assessment	Due date
<input type="checkbox"/> Final three dimensional sketch of proposed solution	
<input type="checkbox"/> Working drawings or template or pattern for product	
<input type="checkbox"/> Materials/parts list, costing and order form	
<input type="checkbox"/> Work schedule/production plan	

Marking key for sample assessment task 3 – Unit 3

Devising project one; proposed solution and pre-production	Maximum possible mark	Allocated mark
Final three dimensional rendered sketch of proposed solution showing any relevant likely finish: <ul style="list-style-type: none"> • well-drawn, correctly proportioned, three dimensional, colour-rendered representation of the proposed product, showing clear development from the concept stage • well-drawn representation of solution • representation of solution, but with minor errors or missing detail 	5–6 3–4 1–2	/6
Presentation of working drawing/s or template or selected pattern: <ul style="list-style-type: none"> • well-drawn, correctly labelled view/s with clear accurate dimensioning • well-drawn views with correct major dimensions • views with majority of correct dimensions, but with minor errors 	5–6 3–4 1–2	/6
Completed list of materials and order form (plus any additional parts if applicable): <ul style="list-style-type: none"> • logical presentation of a complete and correct naming of materials, list of all individual parts with accurate sizes, correct total cost, and completed order form • clear list of materials and parts with correct sizes, costing completed • list of materials with approximate sizes and calculated approximate cost • list of materials with approximate cost • list of materials with other details missing or incorrect • incomplete list of parts 	6 5 4 3 2 1	/6
Proposed steps for manufacturing: <ul style="list-style-type: none"> • most efficient production sequence of preferred methods for making and fitting the parts of the project together with correct tools and correct safe procedures over a timeline • sequential list of preferred methods for making and fitting the parts of the project together with correct tools and correct safe procedures • correct procedures listed with available tools for making the project • outline, with limited detail about procedures and tools for making the project • partial list of procedures and tools 	5 4 3 2 1	/5
Total		/23

Sample assessment task

Materials Design and Technology – General Year 12

Task 2 – Unit 3

Assessment type: Response

Conditions

Period allowed for completion of the task: recommend four weeks allocation of time from introduction to completion of this task, which should include class lessons, with some out-of-class time.

Task weighting

3% of the school mark for this pair of units

Investigate materials and processes

(50 marks)

Within a selected context, investigate and present a report/presentation (in table form) on material uses and classifications, and outline the environmental impacts of production/industry.

Metal

Investigate the uses of **two** ferrous and **one** non-ferrous metal types, focusing on the following:

- furniture products
- building and construction materials
- consumer products

List in table form:

- environmental impact of metals production:
 - raw material extraction and processing – steel and aluminium
 - end-of-life of a product – recycling and safe disposal

or

Textiles

Investigate the uses of cotton, wool and **one** synthetic textiles, focusing on the following:

- apparel
- furnishings
- costumes
- textiles art
- non-apparel items

List in table form:

- environmental impact of textile industry:
 - growing, extraction and processing – cotton and wool
 - end-of-life of a product – recycling and safe disposal

or

Wood

Investigate the uses of **two** hardwoods and **one** softwood timber types, focusing on the following:

- furniture products
- building and construction materials
- consumer products

List in table form:

- environmental impact of producing timber:
 - growth/harvesting
 - milling/conversion
 - end-of-life of a product – recycling and safe disposal

What you need to do

You are to:

- investigate, gather and report on specific information about major and specific materials within your selected context (8 marks)

Suggested sections of the research report and illustrated table should include:

- brief opening description of the task: (8 marks)
 - opening description of the broad categories found within the chosen product area
 - specific material title/name
- create a report in table form that explains and illustrates the nature and properties of materials and their uses (11 marks)
- for each material: (10 marks)
 - associated common trade or commercial names of materials
 - list of available forms
 - description of appearance and/or suitable image
 - methods of identification
 - specific properties
 - range of uses
- for environmental impacts of production/industry: (10 marks)
 - outline and summarise, using dot points, the important environment impacts with production of materials and associated industries
- acknowledge all sources of information, using either in-text referencing or an appropriately set out reference list (3 marks)

Your report should be approximately 1,500 words in length and include features to enhance its presentation (images, subheadings, dot points, diagrams, graphs).

It should be submitted in a written and illustrative form (digital or hard copy – check with your teacher) and include a bibliography of all references used.

You are encouraged to gather information from various sources (internet, written text and your environment) to complement your work.

Progress through the assignment should be in stages, and your teacher may direct you to present and discuss researched information in the early stages of your study, with other sessions to discuss draft investigation notes and methods of setting out the report.

What needs to be submitted for assessment	Due date
<input type="checkbox"/> Collected information	
<input type="checkbox"/> Relevant investigations and notes	
<input type="checkbox"/> Draft report	
<input type="checkbox"/> Final report	

Marking key for sample assessment task 2 – Unit 3

Investigate and report/present (in table form) on material uses and classifications, and outline the environmental impacts of production/industry	Maximum possible mark	Allocated mark
Investigation and information gathering: <ul style="list-style-type: none"> • accurate, detailed information on each category of material type within each product area, supported by collection of relevant clear images • collection of main broad points about the material types within each product area, with little or no use of images • collection of information about the material types for each product, but majority of statements copied directly from source or single reference • critical information missing 	7–8 5–6 3–4 1–2	/8
Report presentation – introductory description: <ul style="list-style-type: none"> • introductory description of the task is clearly written • description of the task written in general broad or unclear terms Use of terminology and presentation techniques: <ul style="list-style-type: none"> • clear correct terminology and uncluttered setting out of presentation • confused terminology and/or presentation below standard 	3–4 1–2 3–4 1–2	/8
Table of contents has the following accurate complete information: <ul style="list-style-type: none"> • correct specific material titles/name/s combined with associated common trade or commercial names (all five) • accurate list of available forms with description and/or suitable images • list of available forms with images, but with small errors or some detail missing • incorrect and/or critical information missing from chart 	1–5 5–6 3–4 1–2	/5 /6
Report on methods of identification, specific properties and range of uses of materials: <ul style="list-style-type: none"> • accurate explanation of identification, properties and uses • complete explanation of identification, properties and uses • complete explanation of identification, properties and uses, but with small errors or some detail missing • relevant content, but errors and missing detail in specific sections • content incorrect and/or critical information missing 	9–10 7–8 5–6 3–4 1–2	/10
For environmental impacts of production/industry: outline and summarise, using dot points, the important environment impacts with production of materials and associated industries: <ul style="list-style-type: none"> • detailed summaries of relevant environmental, production and industry issues, supported by relevant images • collection of relevant points about environmental, production and industry issues, supported by some relevant images • collection of main broad points about environmental, production and industry concerns, with little or no use of images • collection of information about topics on environmental and production issues, but majority of statements copied directly from source or single reference • critical information missing 	9–10 7–8 5–6 3–4 1–2	/10
<ul style="list-style-type: none"> • accurate, complete and extensive in text referencing or reference list • relevant, but limited range of references • partial or incomplete in text referencing or reference list 	3 2 1	/3
	Total	/50

Sample assessment task

Materials Design and Technology – General Year 12

Task 5 – Unit 3

Assessment type: Production

Conditions

Period allowed for completion of the task: five to six weeks

Task weighting

20% of the school mark for this unit

Manufacture of project one

(25 marks)

Use safe production methods to produce the product.

Document a daily work log/time sheet, including record of production with photos of important stages of the production.

What you need to document and include in your daily work log/time sheet:

- complete an ongoing record of production with photos at each stage of production
- take photographs of completed project

Use the following procedures to complete the product:

- follow proposed production plan:
 - maintain time management while using tools, equipment and machinery to complete production:
 - follow instructions from plans
 - maintain safety requirements
 - record changes to materials list or costing
 - record regular journal/diary entries
- ongoing evaluation techniques: diary, journal or portfolio notes and use of photography to record ongoing progress/decision changes made to the product

What needs to be submitted for assessment	Due date
<input type="checkbox"/> Stages of production (teacher observation)	
<input type="checkbox"/> Production daily work log/photos recording the making process	
<input type="checkbox"/> Completed product	

Marking key for sample assessment task 5 – Unit 3

Manufacture of project one	Maximum possible mark	Allocated mark
Provides relevant contents and recordings in daily work log/time sheet: <ul style="list-style-type: none"> • detailed records of ongoing correct workshop practices • inconsistently records work practices 	2 1	/2
Completed marking out of material/s as required from plan and cut parts to required shapes using appropriate tools: <ul style="list-style-type: none"> • marking out completed correctly, all parts correct size and accurately cut • marking out completed, parts correct size • marking out completed with minor corrections, parts correct size • marking out required correction, adjusted parts re-sized • marking out required correction, replacement piece cut 	5 4 3 2 1	/5
Completed assembly/fitting of product parts: <ul style="list-style-type: none"> • all parts assembled accurately with precise alignment and registration • all parts assembled, minor corrected imprecision • all parts assembled, minor shape irregularity • all parts assembled, but some required second attempt, some poor fit • parts fitted, and some require additional material for second attempt 	9–10 7–8 5–6 3–4 1–2	/10
Completed product and ongoing record of production: <ul style="list-style-type: none"> • correctly assembled/fitted product, presented as per design proposal. Detailed record of production clearly showing each stage of the process • correctly assembled/fitted product, easily identified from the design proposal. Well explained stages of the process in the record of production • completed product, appearance shows minor detail flaws. Limited record of production • assembled, but poorly fitting parts, appearance and production notes show a deviation from the design and production plan 	7–8 5–6 3–4 1–2	/8
	Total	/25

Sample assessment task

Materials Design and Technology – General Year 12

Task 6 – Unit 3

Assessment type: Response

Conditions

Period allowed for completion of the task: one week

Task weighting

2% of the school mark for this unit

Evaluation of completed product

(20 marks)

Evaluate your finished product by responding to evaluation questions.

What you need to do

Write clear statements, and provide suitable photographs, to evaluate the project

Comment on the following key points, using relevant dot points:

- Did the product meet the design requirements? (10 marks)
 - compare product against design ideas, brief, statement of intent and final drawings
 - comment on the design fundamentals:
 - aesthetics – shape, size and finish
 - function – safe usage and operation
 - final cost
- Did the manufacturing processes achieve a quality product (performance criteria)? (5 marks)
 - comment on success of manufacturing skills:
 - correct shape and size as per design
 - proportion and fit
 - accurate joins, no gaps
 - manufacturing influences on appearance
 - comment on your ability to keep to the production procedure/timeline
- Could the shape, size and design features of the product be improved? (5 marks)
 - comment on feedback from the consumer
 - comment on needs, values and beliefs of the end user

What needs to be submitted for assessment	Due date
<input type="checkbox"/> Completed report	

Marking key for sample assessment task 6 – Unit 3

Evaluation of completed product	Maximum possible mark	Allocated mark
Provides evaluative comments with relevant photographs in regards to the specifications and design considerations of aesthetics, function and safety, and cost: <ul style="list-style-type: none"> • clear comments referring to specific design fundamentals combined with justification of design fulfilling statement of intent requirements • comments outlining major uses and function, and referring to points within statement of intent • comments linked to statement of intent expressing personal likes and dislikes about finished product • comments outlining use of product, but little reference to statement of intent • comments reflect superficial evaluation 	9–10 7–8 5–6 3–4 1–2	/10
Comments on the manufacturing processes: <ul style="list-style-type: none"> • clear flow of evaluation of all procedures with reference to specific procedures, improvements with little or no criticism of process • appropriate reporting and/or comment on procedures with some logical evaluation of operations, with little criticism of process • comments on procedures with limited evaluation of operations, and some criticism of process • brief comments with few references to journal or diary • comments reflect superficial evaluation 	5 4 3 2 1	/5
Provides evaluative comments with relevant photographs in regards to the shape and size – improvements: <ul style="list-style-type: none"> • clear comments referring to the needs, values and beliefs of the end user • comments suggesting improvements referring to user’s feedback • comments about improvements because of personal likes and dislikes • brief reference to changes to improve function or aesthetics • few comments/superficial notes on improvements 	5 4 3 2 1	/5
	Total	/20