2006 Assessment Report

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

2006 Design and Technology GA 3: Written examination

GENERAL COMMENTS

Students and teachers should be aware of the following marking policies.

- If a student answered part of a question incorrectly, other parts of that question that related to the incorrect answer were also marked as incorrect.
- Answer that included incorrect information could not be given full marks.
- If a question asked for a number of points and a student gave more than the required number, only the required number are assessed, in the order they are presented. Therefore, if a student thinks of a better answer, they should write this down and then cross out their weakest response.

Areas of strength

- The majority of students answered all questions.
- Students appeared to have spent more time on the design this year, and the design options showed an improvement over previous years.

Areas of weakness

- Mass production and quality management were two areas in which many students lacked knowledge.

Section A

Question 1

Marks	0	1	2	3	4	5	6	Average
%	3	6	10	12	22	4	42	**4.2**

Column 1	Column 2
Process	**Stage of product cycle**
Investigate existing product designs	6
Purchase and use of product	4
Generate initial ideas	1
Work on practical and technical aspects of the product design	2
Suppliers – provide materials and product components	3
Gather information on costs, sales and profits	5

Question 2a.

Marks	0	1	Average
%	7	94	**1.0**

The purpose of the product is to provide a portable shower for people where there is no access to showers.

This answer came directly from the brief provided.

Question 2b.

Marks	0	1	2	Average
%	1	3	96	**2.0**

Two potential users of the shower included:

- surfers
- bush walkers
- campers
- beach goers
- tradespeople
- swimmers.

Question 2c.

Marks	0	1	2	Average
%	9	30	61	**1.5**

- Size must be able to be held comfortably in a person's hand.
- Size must be compact to minimize bulk when transported.
- Weight must not be too heavy when full of water as the product is held above the head.
- Weight must be light enough to be carried easily in a bag/backpack because some users will be carrying them on treks or on the beach.

Both size and weight needed to be discussed in responses.

Question 2d.

Marks	0	1	2	3	Average
%	27	21	26	27	**1.5**

Functional factors of the product included:

- the shower is for use outdoors, so materials selected for the shower need to be UV resistant as it will be exposed to the sun and a variety of weather conditions
- the materials used to make the containers must have thermal properties to enable it to retain heat for some time
- inclusion of an electrical heating system with a thermostat control in the design will allow for water to warm to an **appropriate** temperature. This is to ensure that the user is not scalded by boiling water or the water is not too cool.

One extended response was required for the three marks.

Question 2e.

Marks	0	1	2	Average
%	12	21	67	**1.6**

The shower addresses environmental concerns by:

- eliminating the need for public showers in remote areas which have the potential to be vandalised or leak undetected
- reducing the amount of fresh water used to shower after swimming or surfing
- using less water and thus conserving limited water supplies
- reducing the impact on the coast caused by suppling shower space, water run off, erosion and rusty pipes that do not blend with the environment.

Two marks were available. Students could provide two points or one well-explained response.

Question 2f.

Marks	0	1	2	3	Average
%	23	23	30	24	**1.6**

Responding to demand

- A need for the surf shower has been identified through market research and so a product is produced in response to this consumer need.

Creating a demand:

- If a designer comes up with a product such as a surf shower and no particular need has been identified for such a shower then the designer has to create the demand for the product by promoting an awareness of the product. The intention is to make the consumer think that they need such a product.

Three marks were available. Students needed to provide a clear explanation of the differences between responding to and creating a consumer demand. Students who did not use the surf shower as the example were unable to score full marks.

Question 2g.

Marks	0	1	2	3	Average
%	15	20	33	31	**1.8**

Surfers

- Advertise in surf magazines. These magazines directly relate to the target audience. This could be an advertisement in the form of an article. Images would be related to the target group and perhaps endorsed by a well-known surfer.
- Provide samples at a surf life saving club. The target group will be present at the club and could try out a demonstration model. Word of mouth could be generated from the club.

Families at the beach/campers/bush walkers

- Use television shows such as *The Great Outdoors* to promote the product. This segment could endorse and promote the product to the target audience. A giveaway to the first 10 customers who ring up would promote the product and create an interest.

One mark was available for the strategy suggested and a further two marks for a logical justification of the strategy.

Question 2h.

Marks	0	1	2	Average
%	11	27	61	**1.5**

Factors that need to be considered when deciding on the **best** price for the product are:

- what the target audience is prepared to pay for the product
- the price of similar products
- production costs
- advertising costs
- distribution costs
- retail profit margin.

Two points were required for the two marks.

Question 2i.

Marks	0	1	2	3	4	Average
%	21	15	28	23	13	**1.9**

Introduction

- In the introduction stage the marketing aim is to **create an awareness** of the product and **educate people** about the function of the product. A lot of money is spent on advertising and promoting the product in order to create this awareness.

Maturity

- In the maturity stage the aim is to **promote the lifestyle** that goes with the product, as the consumer is already aware of the product. Advertising and promotion of the product is less intense and focuses on more subtle forms of advertising. The actual product itself is no longer the main focus. The focus becomes the desired lifestyle of the users of the product. The aim is also to maintain peak sales of the product for as long as possible by reminding people that the product is available. This can be through incentives such as giveaways, endorsements, price reduction, competitions, etc.

High level, extended responses were required for this four-mark question.

Question 3a.

Marks	0	1	2	Average
%	32	24	44	**1.1**

Environmental problems included:

- non-renewable resources/materials are limited
- land fill
- water pollution
- air pollution
- greenhouse effects.

Two appropriate problems were required for the two marks to be awarded.

Question 3b.

Marks	0	1	2	Average
%	9	26	65	**1.6**

- 100 per cent recycled materials are being used so land fill is being reduced.
- The products are more easily disassembled, which makes recycling easier and more efficient.
- Packaging is either re-usable or recyclable.
- Weight of packaging is considered so that fuel used in transportation is reduced.
- Bulk transport is used to minimise greenhouse effects.
- Less energy is being used in the use of the product as insulation keeps water warmer for longer, preventing the need for constant reheating

Students needed to provide a clear and logical response explaining how **one** of these problems was being overcome.

Question 3c.

Marks	0	1	2	3	Average
%	12	31	36	20	**1.7**

It is important to consider the disposal of the product when choosing materials to minimise the product's impact on the environment. Government regulations require that the manufacturers of electrical products are responsible for the disposal of the products they manufacture or for ensuring that the consumer can responsibly dispose of the product. There are a number of ways that the impact can be minimised such as:

- selecting materials that can be recycled
- selecting materials that can be easily separated by not using glues/fixings in production
- not using painted coatings which would cause the material not to be able to be recycled
- selecting renewable sources of materials
- materials cost the company money to be disposed of in landfill.

A high level, extended response was required for this three-mark question.

Section B

Product chosen	none	desk	lamp	outfit
%	2	48	19	31

Students first needed to identify one important specification from the design brief, excluding cost or time. For example, the garment must conceal a pear-shaped body.

Question 4ai.

Marks	0	1	2	Average
%	29	24	48	**1.2**

Students were required to justify why this particular specification is important. For example, the garment must flatter the client's problem areas so that she looks her best on the night.

A logical justification was required for two marks.

Question 4aii.

Marks	0	1	Average
%	28	72	**0.7**

Students were required to write an evaluation question that they had identified from the specification. For example, how has the garment concealed the client's figure faults?

This needed to be written as a question **and** relate to the previous answer.

Question 4aiii.

Marks	0	1	2	Average
%	34	32	34	**1.0**

Students were required to explain how they would check to see if this criterion has been met. For example, ask the client to try on a calico toile to see if the fitting of the garment flatters her figure.

A logical type of check was required.

Question 4bi.

Marks	0	1	2	Average
%	22	39	40	**1.2**

Two tasks that you would need to carry out as the designer include:

- research materials and ideas
- produce design options
- make samples
- produce a prototype
- estimate costs
- liaise with the client.

Two responses were required for two marks. Answers needed to state more than just 'satisfying the needs of the client'. Some students related their answers directly to their specific design option, which was okay.

Question 4bii.

Marks	0	1	2	3	Average
%	6	22	41	31	**2.0**

The designer would make a prototype/toile/model because:

- it can be hard to visualise a three dimensional product from a two dimensional drawing
- you can physically interact with a three dimensional product
- problems can be more easily identified.

An extended, high level response was required for three marks.

Question 5
Use of image for inspiration

Marks	0	1	2	3	Average
%	13	30	33	24	**1.7**

For full marks, the design needed to show an obvious use of architectural images for inspiration.

Annotation of design specifications

Marks	0	1	2	3	Average
%	7	16	27	50	**2.2**

Three annotations were needed for three marks.

Clarity and detail of drawing

Marks	0	1	2	3	Average
%	5	30	41	24	**1.9**

The drawing needed to be clear, technically well drawn, logical and give some indication of how the product would be constructed.

Function/suitability for intended use

Marks	0	1	2	3	Average
%	8	28	38	25	**1.8**

This criterion was assessed on whether the design really suited the occasion; that is, an opening night.

Innovation and creativity

Marks	0	1	2	3	Average
%	14	37	31	18	**1.5**

Students were assessed on how innovative and creative the design was.

Marks were awarded as follows:

- high – three marks

- medium – two marks
- low – one mark
- zero marks if the criterion was not shown.

Question 6a.

Marks	0	1	2	3	Average
%	28	34	20	18	**1.3**

The illustration provided needed to be clear. An example of an acceptable description would be: I would use common dovetail joints to fit the sides of the drawers to the front of the drawer. This involves the use of a metal dovetail template, putting it over the drawer sides and drawer front edge, then using a router around the template. Join and glue.

The complex processes that were expected in responses were:

- textile processes: embroidery, beading, attaching a collar, reveres, cuffs, binding, lining a garment, constructing with bias-cut fabrics, constructing and inserting any kind of sleeve, making and attaching pockets, constructing button holes, constructing or altering a pattern, dying fabrics, screen printing, tucking of any sort, pleating of any sort, felting, mitred corners
- wood/metal processes: types of joints such as biscuit, dovetail, welding
- plastic/ceramic processes: melting, moulding, etc.

One mark was awarded for the illustration of the complex process used to make the product, and two marks for a brief, logical description of the complex process illustrated.

Question 6b.

Marks	0	1	2	3	Average
%	34	27	20	18	**1.2**

Students were required to justify why they have chosen to use the previously mentioned complex process.

Sample one-mark response – beading

- Because it makes the garment look glamorous.

Sample two-mark response – welded frame

- Welding is strong and will provide a stable base for the desk.

Sample three-mark response – dovetail joint

- The front of the draw will be under constant stress as it is being pulled open and pushed closed. A dovetail joint is strong and durable and is able to withstand such stress so that the draw does not break.

Question 6ci.

Marks	0	1	2	Average
%	7	16	78	**1.7**

Examples of acceptable materials included:

- blackwood, red gum, jarrah, radiata pine and aluminium
- corrugated iron, chrome, stainless steel and MDF
- wool crepe, polyester satin, cotton/spandex/lycra, polyester cotton, acrylic knit, cotton polyester knit, silk, taffeta lining and Bem silk lining.

Two **specific** names of materials that have been used in the design were required; generic terms such as wood, metal, fabric and plastic were not given a mark. Materials that were obviously inappropriate were not accepted.

Question 6cii.

Marks	0	1	2	3	4	Average
%	13	10	24	19	35	**2.5**

In the box provided students were required to:

- give brief descriptions of the materials' characteristics/properties
- explain why the characteristics/properties are suitable for the design.

An example of a good response is as follows.

	Material Characteristics/properties	Suitability for the design
Cotton lycra	Cotton is easy to work, is a good weight, washes and dyes well, is dye fast, breathes, creases and has no stretch. Lycra is elastic. The combination produces a fabric that breathes, is comfortable to wear and has less tendency to crease.	Good colour range available, comfortable to wear, does not crease very much.
Silk	Requires skill in sewing, good drape, usually not colour fast,	Looks luxurious, hangs beautifully.

Question 7ai.

Marks	0	1	2	Average
%	39	31	30	**0.9**

Further research is necessary before going into production to:

- ensure availability of materials and components
- ensure latest processes are being used
- ensure materials will be able to be purchased at a viable price.

For full marks, students could provide two dot-point answers or one well-explained response.

Question 7aii.

Marks	0	1	2	Average
%	25	44	31	**1.1**

Market research is useful to the manufacturer because it:

- gives feedback about customers' wants and desires
- tells the manufacturer what the customer will pay for a product
- can give information about competitors' products and prices.

For full marks, students could provide two dot-point answers or one well-explained response.

Question 7aiii.

Marks	0	1	2	Average
%	40	35	25	**0.9**

The advantages of mass producing a product (excluding cost) are:

- more products can be made
- products can be made more quickly
- there is a greater degree of quality/more uniformity
- the business can be expanded to meet the demands of more customers.

Question 7bi.

Marks	0	1	2	Average
%	20	26	53	**1.3**

Two possible effects of poor quality management are on a company:

- wastage of materials
- wastage of energy
- loss of reputation
- poor quality products
- customer dissatisfaction
- costly recalls of products
- loss of profit.

Question 7bii.

Marks	0	1	2	Average
%	39	38	23	**0.9**

It is important to consider the cost of poor quality management because, for example, the company needs to be aware that a bad reputation could mean that potential customers would lose confidence in the company and not purchase the product. Products that have been made badly because of poor quality management will have to be fixed or replaced, costing time and money.