

2015 VCE Product Design and Technology examination report

General comments

Students displayed strength in the following areas.

- identifying one area of research
- the meaning of 'Life Cycle Analysis'
- identifying risks associated with the production of products

Students displayed weakness in the following areas.

- identifying forms of testing
- the product design process: stages and steps
- product design factors
- reporting on the effectiveness and efficiency of the design, planning and production activities
- drawing and annotating processes
- design elements and design principles (parameters)

The following is advice for teachers, and for students preparing for the examination.

- The *VCE Product Design and Technology Study Design* should be the reference for all terminology.
- Key knowledge needs to be clearly understood.
- Students need to be aware that the design option must reflect the scenario stated in the examination.
- Students who write lists in response to 'Discuss' questions will not gain full marks.
- When a question asks for students to provide one answer and the student provides more than one, the student's first answer will be the only answer assessed.

Specific information

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual information.

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

Section A

Question 1

Marks	0	1	2	3	Average
%	23	26	24	26	1.6

Students were asked to list one step for each stage; however, some students had difficulties in doing so and either wrote the incorrect step for the stage or wrote more than the required number of answers.

The following are examples of high-scoring responses.

Stage	Step
investigating and defining	<ul style="list-style-type: none"> • <i>identify client, user, need, problem or opportunity</i> • <i>design brief</i> • <i>design option criteria and product evaluation criteria</i> • <i>research</i>
design and development (conceptualisation)	<ul style="list-style-type: none"> • <i>visualisations</i> • <i>design options</i> • <i>working drawings or pattern drafting</i>
planning and production	<i>production plan or production</i>
evaluation	<ul style="list-style-type: none"> • <i>product evaluation</i> • <i>production planning and process evaluation</i>

Question 2

Question 2a.

Marks	0	1	Average
%	52	48	0.5

Students were asked to identify a secondary function of the Cellet Hand Stand. Their responses needed to relate to the role of the stand. Responses related to tablet devices were not acceptable as they did not relate to the stand.

Question 2b.

Marks	0	1	2	Average
%	48	17	35	0.9

Students needed to explain the importance to the end user of the secondary function identified in part a.

The following are examples of high-scoring responses to Questions 2a. and 2b.

Question 2a.: *To be up to date, stylish, attractive aesthetics (To enhance the end user's life style)*

Question 2b.: *The Cellet Hand Stand will look good on a table when a tablet has been removed. The cellet Hand stand then becomes an piece of sculpture that can be enjoyed.*

Question 2a.: *The Hand Stand allows the tablet device to be adjusted*

Question 2b.: *The Cellet Hand Stand allows the tablet device to be adjusted to suit the viewing height, this decreases the strain on the neck whilst viewing or using the device.*

Question 3

Marks	0	1	2	3	Average
%	11	11	29	48	2.2

Students needed to identify and demonstrate understanding of the role of research prior to the production of the Cellet Hand Stand.

The following are examples of high-scoring responses.

Identify

- *Researching the quality of materials*
- *Market research what was already on the market*
- *test the characteristics and properties of materials*
- *investigate consumers' needs and wants by testing a range of designs*

Explain

- *You need to establish the type of material that would be the most appropriate, determine the most effective material which allows for durability and strength yet flexibility.*
- *You need to understand the needs of the consumer before the product is created therefore creating a product that people will want to buy.*

Question 4

Marks	0	1	2	3	Average
%	56	7	11	25	1.1

Students needed to select one design element or one design principle (parameter) used in the Cellet Hand Stand. Students had difficulty selecting an appropriate design principle. When students listed the correct principle or element they were able to explain it effectively.

Examples of possible design elements or design principles (parameters) students could select from included:

- principle – balance, emphasis, repetition, movement/rhythm, pattern, proportion, symmetry, space and surface
- element – point, line, shape, form, texture, tone, colour, transparency, translucency and opacity.

The following is an example of a high-scoring response.

Identify: *Shape*

Explain: *The shape of the product will influence the purchaser to choose one product over another. Its shape also gives you your first impression: Does it look elegant, practical, and stylish?*

Question 5

Marks	0	1	2	3	4	Average
%	17	23	28	19	12	1.9

Students were required to explain the benefits of continuous (volume) production to both the manufacturer and the end user of the Cellet Hand Stand. Low-scoring responses tended to define what continuous manufacturer meant, but this was not what the question asked.

The following is an example of a high-scoring response.

Manufacturer:

Continuous (volume) production is economical because of the high numbers produced. There is little need to adjust the machinery or processes involved. This produces a time-benefit.

End user:

There is continuous (volume) production, the product is cheaper, so the cost of the product for the end user should be cheaper, too. The product is easily replaced because there lots about. The end user can always purchase another one if necessary.

Question 6

Marks	0	1	2	3	Average
%	12	17	27	45	2.1

Most students were able to identify each area of the marketing plan.

The following are examples of high-scoring responses.

People:

- *teenagers*
- *ICT users*
- *people that want a stand to hold their tablet.*

Product: free-standing, hand-shaped stand to hold tablet devices

Place:

- *computer stores / outlets such as JB HiFi*
- *Harvey Norman, stores that specialize in technology devices*
- *retail stores or On-Line outlets where tablet accessories are sold*

Promotion:

- *a pamphlet showing all the latest functions of the device and stating the benefits for the end user*
- *Advertisements in technical magazines*
- *Radio and TV advertisements*
- *Might offer a 50% discount on the price for the first 50 users*

Question 7**7a.**

Marks	0	1	2	Average
%	53	25	22	0.7

Students had difficulty in explaining what is meant by Life Cycle Analysis (LCA). Many students did not demonstrate understanding of the term.

The following is an example of a high-scoring response.

LCA assesses the full environmental impact over the life of a product. LCA quantifies or assesses the environmental impact rather than the financial impact.

7b.

Marks	0	1	2	Average
%	56	22	22	0.7

Students struggled to identify two stages of the LCA that the designer of the Cellet Hand Stand would need to consider.

The following are examples of high-scoring responses.

- *extracting and processing materials*
- *manufacturing*
- *transporting and distribution*
- *use, reuse and maintenance*
- *sourcing materials*
- *recycling and final disposal of the whole or parts of the product (or its waste)*

Question 8**8a.**

Marks	0	1	2	3	Average
%	50	11	8	32	1.2

Students had a poor understanding of areas of sustainability. Many were able to identify one form of sustainability but struggled to identify three.

The following is an example of a high-scoring response.

- *Environmental*
- *Social equity and justice*
- *Economic*

8b.

Marks	0	1	2	3	Average
%	47	21	16	17	1

Students had difficulty relating their explanation to the Cellet Hand Stand.

The following are examples of high-scoring responses.

- Area of sustainability: *environmental*

Relevance: *The idea that we should be looking after the Earth and its resources. We have to look after everything and not use up all the resources. The Hand Stand should be made of materials that should be able to be recycled.*

- Area of sustainability: *social*

Relevance: *The health and safety issues that might affect the people involved in the production of the Hand Stand should be protected. End users should also have their health and well-being protected.*

- Area of sustainability: *economic*

Relevance: *The making of Cellet Hand Stand from materials that can be recycled. The Cellet Hand Stand also needs to be affordable for the end user who might like to buy it. The materials used to make the Hand Stand should be produced from a materials base that is reasonably priced.*

Question 9

Marks	0	1	2	3	Average
%	27	12	24	37	1.7

Most students showed that they were aware of different forms of drawing techniques. In the product design process, the characteristics and purpose of drawings vary according to the type of communication required.

The following are examples of high-scoring responses.

- Identify: *Visualisations*
Explain: *Visualisations are quick sketches that the designer explores. They are not fully developed ideas.*
- Identify: *Design Options*
Explain: *Design Options provide a good indication to the client what the product could look like. Annotations provide extra information to the client about size or materials.*
- Identify: *Working drawings, pattern drawings*
Explain: *Working drawings shows how the product will be constructed. These drawings are used to work out product specifications, such as sizes required.*

Question 10

Marks	0	1	2	3	4	Average
%	53	5	11	15	16	1.4

Students needed to define IP (intellectual property) and explain its importance to designers of new products. It was important for students to answer both parts of the question.

The following are examples of high-scoring responses.

- *Intellectual property is generated through intellectual or creative activity.*
- *Types of intellectual property protection include patents, trade-marks, design registration, confidential information/trade secrets, copyright, circuit layout rights and plant breeder's rights.*
- *IP allows the designer to earn from their creations.*
- *IP protects designers through patents and trademarks.*
- *Through such means, the designer can prevent others from using the design or passing it off as their own.*

Question 11

Marks	0	1	2	3	Average
%	35	10	18	37	1.6

Students needed to be able to demonstrate an understanding of the correct terminology:

- style obsolescence
- functional obsolescence
- technical obsolescence.

The following is an example of a high-scoring response.

Identify: *Functional obsolescence*

Explain: *When a product wears out, deteriorates or breaks down after a certain amount of time and parts cannot be replaced. Sometimes, it is not worth repairing.*

Question 12

Marks	0	1	2	3	4	5	6	Average
%	19	28	11	13	15	8	6	2.2

Students needed to validate their view on the statement and refer to two product design factors. Students were given marks on their level of understanding of how design is mitigated by factors. Full marks were not given when a student focused on one factor or listed six points. Students needed to discuss the relationship between the designer and the client within the parameter of the design factors.

The following are examples of high-scoring responses.

I do not believe the designer has the greatest influence on the product design as their values will differ greatly from that of the client. It should be remembered that the client is the one that requires the product to be designed to their specifications as they understand the needs and wants of the customers. The client will also require the appearance of the product to fit in with the needs and wants of the consumer. The designer must follow the brief supplied to them by the client, otherwise an agreed outcome might not be possible. The client may possess a greater knowledge of what is required and the designer needs to follow that carefully to be able to produce a good design.

I believe that the designer ability to influence the design of the product is greater than the client/end user. This occurs across two major areas; the designer's understanding of materials (characteristics and properties) and their ability to explore ideas (Innovation and creativity) to resolve solutions for the client. The designer attempts to create a solution from being innovative in the way they use materials. To achieve this they must have an understanding of the materials which the client may not have. The designer has the ability to solve potential problems and develop new or improved solutions or modifications when required. The designer has a range of knowledge and experience that the client does not have. The client may come up with a solution but this does not mean that they have looked at all possible solutions or explored a range of ideas.

Section B

Question 1

Marks	0	1	2	Average
%	26	31	43	1.2

Students were generally able to list some characteristics related to the design brief.

The following are examples of high-scoring responses.

- *identifies with sci-fi, creative style*
- *likes a family friendly environment*

Question 2

2a.

Marks	0	1	Average
%	8	92	0.9

2b.

Marks	0	1	Average
%	17	83	0.9

Most students had a clear idea of constraints and evaluation criteria.

The following are examples of high-scoring responses to Questions 2a. and 2b.

- Question 2a.: *Two or more materials must be combined*
Question 2b.: *Will it be possible to incorporate two or more materials into the design?*
- Question 2a.: *The products must be ready for the opening in June.*
Question 2b.: *Will it be possible to meet the deadline given that several things need to be made?*
- Question 2a.: *The products must reflect anime, manga, video games, television, movies, comics or books*
Question 2b.: *Is it possible for these types of products to reflect anime, manga, video games, television, movies, comics or books*

Question 3

3a.

Marks	0	1	Average
%	27	73	0.8

3b.

Marks	0	1	2	Average
%	23	32	45	1.2

This question was answered reasonably well. However, students need to understand that a materials test usually occurs prior to the production stage.

The following are examples of high-scoring responses to Questions 3a. and 3b.

- *Durability test: Durability test allows me to assess whether or not the product will last.*
- *Flammability test: The dress may come near flames so the dress needs to protect the end user*
- *Washing test: The end user needs to know that their jacket will not shrink if it cleaned.*
- *Joining test: The product needs to hold up and not fall apart when being used.*

Question 4

4i.

Marks	0	1	2	3	4	Average
%	5	23	31	25	16	2.3

4ii.

Marks	0	1	2	3	4	Average
%	20	11	25	15	29	2.2

4iii.

Marks	0	1	2	3	Average
%	5	26	37	31	2

4iv.

Marks	0	1	2	3	Average
%	24	21	30	25	1.6

4v.

Marks	0	1	2	Average
%	7	24	69	1.6

4vi.

Marks	0	1	2	Average
%	7	52	41	1.4

The design option needed to communicate what the product would look like when finished. Students needed to annotate their drawings carefully, ensuring that their intentions were understood but also being careful not to reduce the visual impact of the image with too much writing. Overall, the drawings needed to reflect an understanding of the relationship between the design brief and design options. Students are reminded that they need to come prepared to the examination with correct equipment.

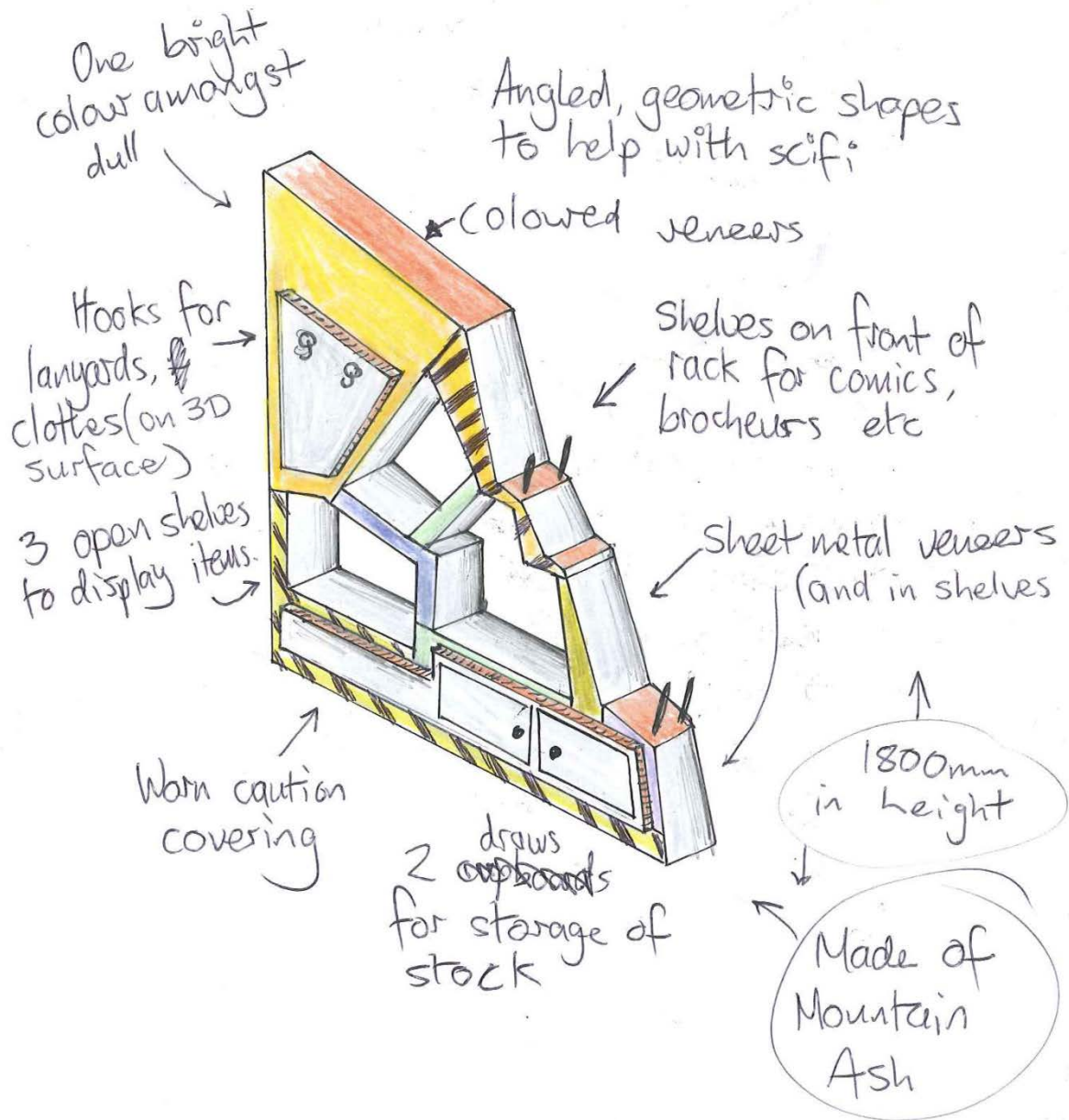
The following are examples of high-scoring responses.



Question 4 (18 marks)

Draw and annotate a design option for the product you have selected on page 8. Draw your design on this page.

The product that you intend to design a room divider

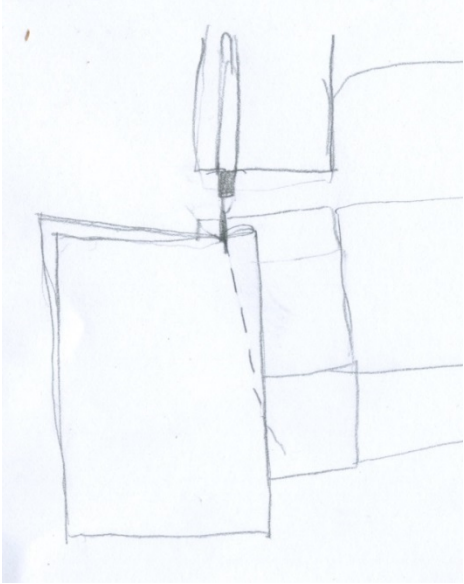
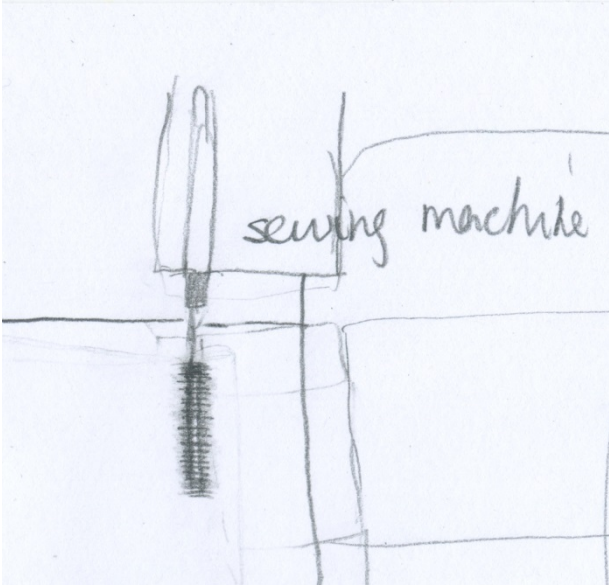


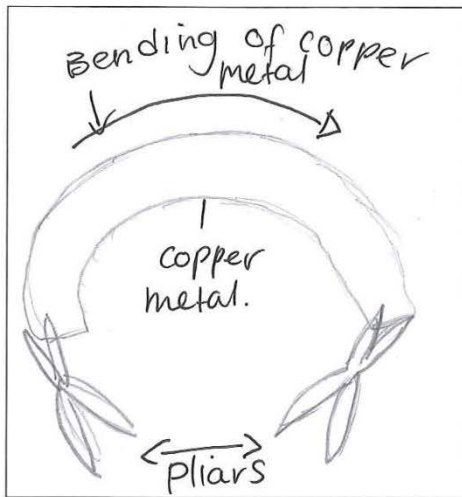
Question 4 (18 marks)

Draw and annotate a design option for the product you have selected on page 8. Draw your design on this page.

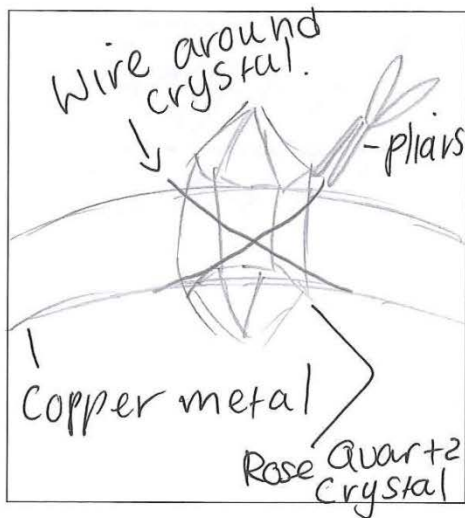
The product that you intend to design Sci-fi style Three-piece costume



	<p><i>Dart making</i></p> <ul style="list-style-type: none">• <i>Fold fabric and sew along dart marks securing ends</i>
	<p><i>Buttonhole</i></p> <ul style="list-style-type: none">• <i>Mark the size of the buttonhole and use machine</i>• <i>Use the buttonhole stitch on the sewing machine</i>



Cold bending the neck piece after it has been warmed by a blow torch. Two pliers are used to bend the copper to the desired bend.



Winding on copper wire around crystal. Putting wire around the Rose Quartz crystal is done using pliers so the wire is tightly placed around the crystal to fit.

Question 5

Marks	0	1	2	3	Average
%	24	19	28	29	1.6

High-scoring responses explained a design feature that was employed in the design option. A design feature was not just repeating a constraint or requirement.

The following is an example of a high-scoring response.

Identify: *the geometric shapes*

Explain: *Black, acrylic, shiny fabric is used for the coat and is also used to decorate the dress.*

This fabric suits the sci fi theme and coordinates the dress with the coat.

Question 6

Marks	0	1	2	3	Average
%	11	31	34	25	1.7

Students had an understanding of why annotations were important. Answers given in list form were not awarded high scores.

The following are examples of possible responses.

- Annotations are critical because they provide explanatory notes for the client. They provide information such as dimensions, fabric types, explanations of details or specific aspects of the drawing. They allow the client to understand the drawing in greater detail.
- Annotations depict the design factors that have been applied to the product. They also portray to the client what you have in mind for the design – its size, shape and its function. As a result, the client and the manufacturer can understand the components and materials used as well as design features and elements

Question 7**7a.**

Marks	0	1	Average
%	49	51	0.5

7b.

Marks	0	1	2	Average
%	35	20	45	1.1

High-scoring responses identified a risk. Low-scoring responses tended to identify a potential risk.

The following are examples of high-scoring responses to Questions 7a. and 7b.

- Question 7a.: *The cutting finger while using a jig saw*
Question 7b.: *Check the jigsaw blade is sharp, the electrical cord is in good condition and clamp your material.*
- Question 7a.: *eye strain and headaches due to poor lighting*
Question 7b.: *Make sure you have your sewing light on and have extra lighting if required.*
- Question 7a.: *Welding burns*
Question 7b.: *Make sure you are wearing a protective face mask and protective clothing.*

Question 8

Marks	0	1	2	3	Average
%	37	23	23	17	1.2

Many students were unable to identify the steps and therefore were unable to gain high scores.

The following are examples of high-scoring responses.

- Identify: *Prototype step*
Explain: *During the construction of a prototype you can identify a problem and rectify it before going into production. This will save on Material waste and production costs.*
- Identify: *Production*
Explain: *The welding of three points could not occur easily so one of the points had to be moved.*

Question 9

Marks	0	1	2	Average
%	27	36	37	1.1

High-scoring responses identified how the client may be involved.

The following is an example of a high-scoring response.

By having the client come in to view the product you are able to find out whether they are happy with the finished product. If not, you can make the necessary alterations knowing that this is exactly what the client required.

Question 10

Marks	0	1	2	3	Average
%	15	20	37	28	1.8

Students needed to show an understanding of how they were to test the finished product.

The following are possible responses.

- Test the clothing on an end user, check against the specific measurements, place on a mock-up of a stage, see if objects such as jackets can be placed on the room divider.
- The best way to test the finished product meets the needs of the client is to test it against the evaluation criteria directly from the design brief.
By having the client come in to view the product you are able to ascertain (test) whether they are happy with the finished product. If not you can make the necessary alterations knowing that this is exactly what the client required.

Question 11

Marks	0	1	2	3	Average
%	15	29	34	22	1.7

Low-scoring responses tended not to understand a report and continually referred only to the design brief.

The following is an example of a high-scoring response.

The report shows if the product has met all of the client's or end user's needs and requirements needs. The report allows you to judge if the design is effective and efficient. The 4-part evaluation criteria should have been developed at the design brief stage and these can be used, and reported on, in the evaluation report.

The evaluation report is important because it can be used to state if future improvements to the design of the product could be made for design, planning and production activities. These comments can be included in the evaluation report and is another reason why the report is important.