GCE EXAMINERS' REPORTS

GCE (NEW)
DESIGN AND TECHNOLOGY
AS

SUMMER 2018

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DESIGN AND TECHNOLOGY

General Certificate of Education (New)

Summer 2018

Advanced Subsidiary

UNIT 1: ENGINEERING DESIGN – 2601U10-1

In general the response to this paper was disappointing as candidates did not demonstrate the in depth technical knowledge and understanding that might have been anticipated. The format of the paper was based on the sample assessment material that was made available through the WJEC Website. It is anticipated that candidates will be able to respond at a higher level in subsequent years as the content of the specification becomes more familiar to those preparing candidates for the examination.

Q.1 Computers are increasingly being used when both developing and manufacturing products.

(a) Explain in detail one benefit of using solid modelling to the designer. **[2]**

This part of the question was answered reasonably well by most candidates although some did not appreciate that solid modelling is associated with Computer Aided Design and described the production of physical concept models.

(b) Explain why computer aided manufacture (CAM) is used in preference to traditional manufacturing methods.

Most candidates responded well to this question and were able to give a number of justified reasons for using Computer Aided Manufacture. Some candidates confused Computer Aided Manufacture with Computer Aided Design and did not appreciate the relationship between the two.

(c) When making incremental developments to existing products engineers often use digital 3D scanning to capture data for analysis. Give two reasons why this is considered to be beneficial in the development of products. **[4]**

This part of the question was poorly answered. Many did not fully understand the advantages of 3D Scanning or the techniques involved.

Q.2 **(a)** Explain the purpose of a five step risk assessment when producing either a mechanical or an electronic product. **[2]**

Most candidates were able to state the purpose of a Risk Assessment but many were unfamiliar with the procedure identified by the HSE.

(b) State any three steps in a five step risk assessment. **[3]**

Marks were generously awarded for any three steps that had been identified. Most candidates recognised the need to identify the risk and then take necessary preventative procedures. Those that achieved higher marks were able to identify the importance of recording and reviewing.

(c) The images below show a CNC router. Suggest three features that would need to be added to the machine in order to ensure that it complies with health and safety legislation. **[3]**

Candidates did not fully appreciate the need to guard moving parts, incorporate dust extraction and include emergency stop procedure. Responses to this question were limited although credit was given to those that made reference to the addition of safety signage and operating instructions.

Q.3 In order to make products such as mobile phones more sustainable they are increasingly being designed for disassembly.

(a) Explain why products that are easily disassembled are considered to be more sustainable. **[2]**

Some candidates answered this question very well. They demonstrated an appreciation of sustainable issues and the need to design for disassembly. Others did not have the knowledge and understanding required in order to obtain full marks.

(b) Discuss how products can be designed in order that they can be easily disassembled. **[6]**

Those candidates that responded well to part (a) also achieved higher marks for this section. A detailed discussion was required for six marks. Some candidates did not appreciate the need to design for disassembly and made limited responses which resulted in vague reference to issues such as battery replacement.

Q.4 The image below shows the structure of a railway bridge based on a simple Warren Truss. As a train moves across it, the bridge it is subject to forces of tension, compression, torsion and shear.

Explain how the bridge structure reacts to and withstands the applied forces. **[8]**

This question was poorly answered. Candidates did understand that triangulated structures provide rigidity but they did not explain the relationship between tension, compression and bending. Very few were able to explain the shear and torsion forces that act on a structure of this type.

Q.5 In developing a wide range of consumer products Dyson UK uses an iterative design process, with emphasis on free hand sketching and cardboard modelling.

Describe the way in which this process has enabled Design Engineers at Dyson to make both radical and incremental developments. **[8]**
Marks will be awarded for the content of the answer and the quality of written communication.

Marks awarded for this section were limited due to poor written communication and the failure by many candidates to recognise the need for iterative development when designing. Some candidates described the products that had been developed by Dyson UK but did not explain the developmental procedure that had been used. The difference between radical and incremental developments was not fully recognised.

Q.6 A theme park has a new roller coaster attraction. The roller coaster car from the new attraction is shown below and holds up to four people.

(a) In the space below write four justified specification points that would need to be included when designing the roller coaster car. **[8]**

In response to this question most candidates were able to state four valid points that could be included in a specification but justification was not always evident. This restricted many candidates to no more than half marks.

(b) **(i)** The roller coaster uses an electronic system to ensure that the car will not move until it is safe to do so. This includes sensors to check the following:

- That the safety harness for each seat has been fully closed
- That the operator has activated the start switch that releases the vehicle

In the box below, draw a detailed block diagram explaining the requirements for a suitable system that includes sensors, process components and an output device. **[8]**

Very few candidates were able to draw a block diagram that identified the input, process and output components that would be required for this procedure to operate correctly. Some credit was given to candidates who had named appropriate components that could be used for different stages.

(ii) The safety harness for each seat consists of a padded tubular steel bar which can be closed around each rider. The bar should lock in position until it is automatically released when the car stops at the end of the ride.

In the box below, draw a detailed annotated diagram of a suitable mechanical system that can be used to lock and unlock the safety harness. **[8]**

Marks will be awarded for a suitable mechanical locking system, a method by which the harness can be quickly released and the use of appropriate communication techniques.

Communication techniques used by candidates in response to this question were limited. Very few knew how to use conventional illustration to draw mechanical components and as a result had difficulty communicating their proposals. Where annotation had been used to explain how a proposal might operate, slightly more credit was given.

(c) To ensure that the roller coaster car does not leave the rails it requires wheels that are located above, below and to the side of the track. Potential wheel arrangements are shown in the illustrations below.

In the box below, produce a suitable design for one of the wheels and a method of attaching it to a stub axle. Your design must include constructional details and named materials from which the components will be manufactured. **[8]**

Many candidates did not read this question correctly or did not understand the meaning of a stub axle. Many attempted to redesign the whole assembly rather than one wheel and the method by which it could be attached. It was anticipated that candidates would provide answers that use keys and keyways, lock nuts and other conventional mechanical conventions. Few candidates appeared to have the background knowledge that would have been required to make a good response to this question. Knowledge of materials and the mechanical properties that would have made them suitable for use was also limited.

(d) Discuss the way in which ergonomic and anthropometric factors play critical roles in the design of a new roller coaster. **[8]**

Those candidates that understood the meaning of ergonomics and anthropometrics were able to produce a reasonable response to this question. Most appreciated the need for the passengers to be held comfortably and securely during the ride but many did not fully appreciate the need for easy access. Ergonomic factors related to sound and vision were often overlooked.

DESIGN AND TECHNOLOGY

General Certificate of Education (New)

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UNIT 1: FASHION AND TEXTILES – 2602U10-1

The new format of the paper was consistent with the sample assessment material that was made available through the WJEC Website.

The overall response to this paper was well received with some disappointing areas where candidates did not demonstrate the in depth technical knowledge and understanding that is requited at this level.

It is anticipated that candidates will be able to respond at a higher level in subsequent years as the content of the specification becomes more familiar to those preparing candidates or the examination.

Some centres reacted to the advice delivered during CPDs addressing the need for candidates to show more in-depth subject knowledge and its application in this form of question.

General weaknesses in candidate performance include:

- *Failure to read the questions properly*
- *Failure to develop a response in order to gain the higher marks*
- *General weakness in specific textile related knowledge*

Q.1 Advances in computer aided design and computer aided manufacturing (CAD/CAM) such as 3D printing, have enabled many designers to create visual effects with their designs that otherwise could not have been realised.

The textile products shown below have been modelled using a 3D printer.

(a) Explain one benefit of using a 3D printer to model ideas when making products like the ones shown. **[2]**

This question was answered by all candidates. Most candidates demonstrated an understanding of 3D printing as a modelling technique and gave developed responses.

(b) 3D images can be generated on screen, using CAD/ICT. Describe one advantage of modelling ideas in this way. **[2]**

Pupils were able to give advantages and in most cases the answers were developed gaining 2 marks. Pupils showed good understanding of using CAD/ICT and were able to give examples.

(c) Manufacturers regularly use laser cutters to support the manufacturing of textile products like the one shown below.
Discuss the advantages and disadvantages of using a laser cutter to the manufacturer **[4]**

This question was answered well by almost all candidates. Candidates were able to demonstrate an understanding of the advantages and disadvantages of the use of the laser cutter. Pupils showed good knowledge of its use in a school environment but in some cases, pupils did not relate this to industry and the manufacturer.

Q.2 Designers use anthropometric and ergonomic data to ensure that a product is comfortable and safe for use.

(a) Explain how anthropometric data is used when designing a textile product. **[2]**

Most candidates were able to state what anthropometrics data is and how it is gathered but were unable to give an example of how it used when designing.

(b) Describe in detail the importance of ergonomics when designing a baby carrier like the one pictured below. **[6]**

Most candidates showed an understanding of ergonomic data in relation to the baby carrier and were able to give examples of this based on the image provided. Many candidates considered both baby and carrier when answering the question and were able to give reasoning for their considerations.

Q.3 The designer sheer top shown below is made from silk organza. French seams have been used in the construction of the top.
Product details:

- 100% silk organza
- £80
- Double frill detail on sleeves
- Frill detail on front and back
- French seams
- Binding on the neckline and hem

(a) Explain why a French seam would be the most suitable seam to use for the top. **[2]**

Candidates had some understanding of the French seam and most were able to relate their answer to the sheer top image provided.

(b) The designer top above retails at £80. Discuss the ways in which the designer could reduce the overall cost of the top. **[6]**

Candidates were able to give clear and relevant suggestions on how the designer could reduce the cost of the top but struggled to gain full marks by not being able to state named seams or fabrics.

Q.4 Non-woven bonded fabrics like the one shown below are widely used in the home, healthcare and in industry.

Evaluate the use of non-woven bonded fabrics in disposable products in a wide range of situations. **[8]**

This question was not answered well overall. Most candidates were able to give examples of non-woven products used in a range of situations but were not able to give reasoning of why they were used.

Q.5 The denim jean is one of the most iconic fashion pieces in history. In the last few years designers have been focused on producing fashionable jeans which are also friendly to the environment.

Describe the ethical and sustainable factors that designers and manufacturer should consider when producing a new pair of jeans. **[8]**

Marks will be awarded for the content of the answer and the quality of written communication.

Some candidates answered this question well. They demonstrated an understanding of ethical and sustainable issues. Others did not have the knowledge and understanding required in order to obtain full marks. Written communication was weak on the whole.

Q.6 Design brief

Issey Miyake is a very successful fashion designer who is known for his technology-driven clothing and products.
A bag from the Bao Bao Autumn Winter 2017 collection is pictured below.
Angular lines inspired by architecture, origami and vivid colours typify this collection.
Design a wearable outfit for a young man or woman based on the Issey Miyake Bao Bao collection for an occasion of your choice.

(a) Write a detailed and justified four point specification based on the brief that you have been given. **[8]**

This question was very poorly received. Almost all candidates struggled to write valid points and to justify them. Where a candidate had made a justification but no point, marks were still awarded.

(b) Sketch your wearable outfit for a young man or woman in the space provided below.

Marks will be awarded for:
(i) An outfit which reflects the Bao Bao collection. **[2]**
(ii) The creativity and originality of your idea. **[2]**
(iii) Quality of communication. **[2]**
(iv) Labelling a minimum of two suitable materials. **[2]**

Overall the response to this question was disappointing. Pupils were able to gain marks for labelling two materials and for designing an outfit which reflected the collection but ideas were not creative or well communicated on the whole.

(c) Using notes and sketches produce a manufacturing specification drawing for your outfit in the space below.

Marks will be awarded for:
(i) A technical/line drawing of the front and back of the outfit. **[4]**
(ii) Labelling of construction and style details. **[4]**

Many candidates did not understand what a manufacturing specification required. Most candidates repeated their design idea for this question. Drawings were simplistic and did not include the detail needed to gain full marks. Most pupils were able to label style and construction details.

(d) Using notes and diagrams explain in detail how you would construct one of the style details from your design. **[8]**

A few candidates answered this question well and demonstrated a clear understanding and gave a detailed explanation. Most candidates lost marks with a simple response and limited explanation.

(e) Issey Miyakes 'Pleats Please' collection is made from 100% polyester. Outfits from the collection are shown below.

Analyse the use of polyester as a suitable material for creating the pleats and making the collection easy to care for. **[8]**

Most candidates were able state the properties of 100% polyester and relate it to the benefits to the customer. However, in most cases, candidates found it difficult to state the process used to pleat the fabric and were not able to explain why the finish can be applied to polyester.

DESIGN AND TECHNOLOGY

General Certificate of Education (New)

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UNIT 1: PRODUCT DESIGN – 2603U10-1

The new format of the paper was well received by candidates and centres. However, In general candidate's responses were disappointing as many were unable to demonstrate the depth of technical knowledge and detailed understanding anticipated at this level.

As the content of the specification and the structure of the questions become more familiar to centres it is assumed that the responses of the candidates will access the higher marks.

The format of this paper was consistent with the sample assessment material that has been available on the WJEC website; however, centres would be advised that this can change in future.

Some centres reacted to the advice delivered during CPDs addressing the need for candidates to show more in-depth subject knowledge and its application in this form of question.

General points

Candidates should be advised to read the question carefully in order to ensure that all elements are understood and are also included in their response.

There were a number of instances where the responses throughout were not detailed enough to gain the higher level of marks.

Well-planned and structured responses score well. These responses contain clear, and specific details relating to the question. They also show accuracy in terms of spelling, punctuation and grammar. An increasing number of candidates require more structure and planning in order to organize information clearly and coherently.

Generic terms, particularly in naming materials (together with their characteristics or properties) are still used by candidates and are therefore not given credit. For example: wood, plastic, metal, as opposed to oak, MDF, ABS and steel.

In question 5 responses varied considerably; responses generally require more structure and planning, whilst ensuring that ALL elements of the question are covered. Majority of candidates were able to write about the designer but very few if any really talked about his work in form and function.

Centres should continue to advise candidates to use the mark allocation indicated at the end of each question to guide the depth of response required and manage time effectively.

Centres should also be advised to remind candidates that answers could be amplified with detailed labelled sketches and/or diagrams where appropriate; many of the answers were unfortunately brief with a few words and simple sketches not allowing the candidate to fully explain the response.

Q.1 Computer Aided Design/ Computer Aided Manufacture (CAD/CAM) is a common method of designing and manufacturing products used by many companies.

(a) Explain the basic principle used by the two CAM machines named below.

(i) Machine: Laser cutter

(ii) Machine: 3D printer

This first question was attempted by all candidates and highlighted a need for many to read the question carefully. Many provided a response that described the process of using either a Laser cutter or a 3D printer. The question required the candidates to describe the principle of using the two CAD machines.

(b) The CAD drawing below shows a proposed design for a wooden hanging decoration. The decoration will be manufactured from 3mm plywood.

State an appropriate CAM machine for the batch manufacture of this decoration and explain the advantages and disadvantages of your selected machine.

Candidates responded well to part b. The majority of candidates were able to identify a suitable CAM machine with the vast majority identifying a laser cutter. All candidates were able to identify the advantages of various CAM machines, however the response for any disadvantages were varied. Weaker response referred to a generic 'it is expensive'. Greater understanding was displayed by candidates explaining a relevant detail; 'the laser will leave a charred edge' or 'a router will generate more waste in the form of sawdust'.

Q.2 Working in a manufacturing environment can be a hazardous activity and as a result suitable safe working practices must be employed.

(a) Explain the meaning of the sign shown below. **[2]**

All candidates responded to this question and were able to identify the fire, fewer candidates were able to identify that the yellow triangle represented a warning sign. On this occasion candidates were credited for identifying a fire risk/hazard.

(b) Write a detailed risk assessment for a machine or piece of equipment you have used. **[6]**
Name of equipment.

All candidates were able to identify a machine or equipment that required a Risk Assessment. All candidates were able to identify some hazards and state how to reduce the hazard, however it is noted that very few candidates were able to use a Five Step risk assessment as recommended by the HSE. Candidates who were able to apply a five-step risk assessment were credited with the highest marks.

Q.3 Products are often manufactured from a range of individual components. Study the photographs below of a stackable chair.

(a) State a possible method of manufacture for the seat and shaping the legs.

(i) Seat **[1]**

(ii) Shaping the legs **[1]**

All candidates attempted this question and were able to identify the two elements that composed the final chair and the vast majority were able to state a suitable method of manufacture for the seat. The most popular and appropriate response being injection moulding. Very few candidates were able to identify a suitable method of manufacture for the legs with many candidates not submitting a response for [ii].

(b) The seat and frame will need to be joined to form a functioning chair. Using notes and sketches explain and justify a suitable fixing method. **[6]**

This question was poorly answered with few candidates achieving high marks. Very few candidates were able to identify a suitable method of joining the metal legs and polymer seat. A significant number of responses referred to the use of glue or epoxy resin. It is apparent that most candidates were not familiar with the principles of joining dissimilar materials or temporary fixings. Those who used these terms were awarded higher marks. To access the highest marks the response required a suitable sketch, again it was noted that the sketching in most cases was weak and is area that could be developed in future.

Q.4 Polymers are materials that are widely used in many every day products and toys.

Evaluate the characteristics and physical properties of ABS and rubber that make it suitable for the toy shown in the photographs above. **[8]**

All candidates attempted this question. The response to this question was generally good with the majority of candidates able to identify the characteristics and properties of both ABS and rubber that made the suitable for the toy.

Some weaker responses did focus on the process of manufacture and considered this to be a characteristic of either material For example: ABS can have a smooth surface; the surface finish is a result of the mould and the manufacturing process not the materials properties or characteristics.

Q.5 The phrase 'Form follows Function' has become the belief of many designers in the 20th and 21st century.

Discuss this statement with reference to the work of James Dyson. **[8]**

Marks will be awarded for content of the answer and the quality of written communication.

A number of candidates did not attempt this question. This question posed the greatest challenge to the candidates and is an area that will easily allow them to improve their marks through thorough preparation. The lower order responses were GCSE in nature and were of a biographical structure displaying little understanding for the work of James Dyson. Almost all candidates answered with primary reference to his vacuum cleaner designs. A significant number of responses made a reference to the number of prototypes he had used and the fact he was the first to develop a bag less vacuum cleaner, but this was not relevant to the question. A few candidates achieving higher marks were able to identify links with his designs primarily the 'ball barrow' and his DC15 Ball, together with the reason for a clear cylinder and the use of conical clusters that identified the development of the centrifugal principle in his bag less vacuum design. A small minority made reference to his other products including his hand-dryers and fans, these candidates generally developed better responses to the question linking the form of his products to the function.

Q6. Household appliances often reflect the audience they have been designed for. Study the images below.

Responses to this design question were disappointing.
Telephone A
Telephone B

(a) The starting point for a designer is a product analysis. Write a critical analysis of one of the products pictured above, justify each observation. **[8]**

This question was generally well answered with a significant number of candidates achieving higher marks. Candidates were clearly able to identify and analyse the key elements of the two telephones with appropriate justifications For example:

'Battery powered handset with no wired connection allows the user to move around a house while making a phone call'.

'The numbers on the buttons on the handset are made from an opaque plastic and light up when the phone is removed from the docking station, this make it easy to see the buttons and shows if the phone is not placed in the dock'

Problem
It is important that independent, visually impaired persons have access to stylish, modern household equipment. A land line phone is important for easy communication and must be easy to operate.

Design Brief
You are asked to design the hand set only for a stand-alone land line phone that is modern in style. The hand set must allow the user to quickly distinguish the mouth piece from the ear piece.

(b) Write four fully justified specification points that will ensure the requirements of the user are met. **[8]**

Given the generally good response to section (a), section (b) was poorly answered with many responses simply stating a specification point. The question requires the candidates to make a relevant justification for each point. Some of the weaker responses were simple regeneration of the brief or simple statements.

For example:
Must distinguish between ear and mouth piece.
Must be easy to operate.
Modern style.

Credit was given when candidates provided a relevant point with a suitable justification.

For example:
There will be different texture at one end of the handset to allow the visually impaired user to identify which way to hold the handset.

(c) In the space provided produce a possible design for the handset. You are required to use a combination of 2D and 3D freehand drawings.

Marks will be awarded for:

(i) An annotated design proposed that displays evidence of your consideration of user interface, function and style. [8]

Responses to this question varied widely. At the higher end candidates clearly linked their proposal to their specification and the user requirements, however, a significant number of candidates did not do this and this resulted in many achieving middle range marks. A significant number of candidates also designed a phone and hand set. Although they were not penalised for this it was clearly evident in the responses that the higher marks were achieved by those who had focused on the handset.

(ii) Labelling and justifying the use of materials in your design. **[4]**

This section was again disappointing; few candidates were able to justify the use of a material. All responses stated that using ABS for the body shell but very few developed this further as a result many candidates were limited to lower marks.

Good responses to this question were able to fully justify the selection of materials For example:

- *ABS injection moulded with a high gloss finish to allow for easy cleaning.*
- *Silicone for the number buttons for a softer feel and to be injection moulded to allow for the use of braille.*
- *Main body injection moulded ABS allows for little waste and is a repeatable process.*
- *Mouth piece coated with textured silicone to allow user to know which direction the phone is in.*

(iii) The quality/presentation and communication of your 2D/3D drawings. **[4]**

You are not expected to render, colour or shade your design work.

This section was again generally disappointing. Many candidates were not able to present their ideas well and the use of freehand drawing was poor, which is of concern because this is a design based course.

(d) Justify how your design meets the four points indicated in your design specification. **[8]**

This final question was generally poorly answered many responses simply stated that the design had met a specification point. This type of response achieved lower marks.

For example:

- *The design has large buttons*
- *A justified response was awarded higher marks*

For example:

- *I decided to make the buttons 15mmx15mm which allows enough space for a large number, in addition the silicone button allow me to incorporate braille allowing blind users to comfortably make calls.*

A small number of responses did not link the response to any of their specification points.

DESIGN AND TECHNOLOGY

General Certificate of Education (New)

Summer 2018

Advanced Subsidiary

UNIT 2: PRODUCT DESIGN/ENGINEERING DESIGN

This is a new specification and was on the whole well received by candidates for the A/S across Wales. Centres have generally adopted the new changes and applied the new mark scheme quite well with no major concerns.

Centres do need to ensure that candidates explore and analyse a range of project possibilities. These project possibilities could come under a range of contextual situations or could be under one context. In some centres candidates appeared to only identify one problem and one design brief. This effectively means that the mark that they could achieve would be in the lower bands only. The aim of the iterative process is to allow the students to consider a range problems and briefs based on analysis of client requirements, research, deconstructing existing products etc.

Design folios were generally well laid out with good examples of the iterative process being followed. This was evident in A3 folios and some good use of sketch books. Centres should continue to encourage candidates to model, develop and iterate as much as possible. These models, tests, concepts could take on the form of a physical model or a 3D CAD model. Sketch books must also continue to be developed and encourages as an iterative working tool, marks for good use of sketch books should be rewarded in the generating and developing ideas section.

Product solutions and prototypes across most centres were appropriate however, centres should consider the timing and marks allocated to the prototype and make products a suitable size. Taking this into consideration the marks allocated to products is proportionally less than in the previous marking scheme, they should still represent a finished product. When centres are making concept models, the products, regardless of function must look and feel like a real product. Quality of finish should remain as important as it has been in the past.

Along with the finished prototypes centres should ensure that the logical sequence and timeline completed should be in a pre-emptive context. Centres should also ensure that flow charts and manufacturing plans contain sufficient detail, considering the '3rd party' aspect. Moderators are however seeing Gantt charts as a means of planning the manufacturing; although this is an acceptable method, a simple coloured in box on a chart is meaningless unless it is reinforced with realistic detail and times that reflect the true manufacturing that went on.

Evaluations as with the previous specification were well written. However, centres need to ensure that far greater time and emphasis is placed on evidencing, testing and user trials. Modifications should be fully realised in annotated sketches or CAD presentations.

Summary of points

- A range of problems that could generate more than one brief
- The problems could come from one in-depth context or a range of different contexts could be considered
- Encourage more modelling and testing of concepts to aid the iterative process. Including CAD modelling
- Continue to develop the use of sketch books as an iteration tool
- Concepts and prototypes of designs made during the generating and developing ideas could be simple card models or even 3D printed products; the importance of them is not the quality but the how they can help with testing and the evolution of the idea/s
- The final concepts and prototype should **look and feel** like a real product. Finish is important
- Logical sequences should be pre-emptive and should be sufficient for a 3rd party to make the product
- Evaluations should contain end testing and user trials with clear suggestions of possible modifications to the product

DESIGN AND TECHONLOGY

General Certificate of Education (New)

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UNIT 2: FASHION AND TEXTILES

This is the first year for the new AS course in Fashion and Textiles. Early indications are that the course has been well received by centres which are encouraging although candidate entries are low when compared to Product Design.

Many centres had prepared their candidates well for the new course and had fully embraced the iterative design process. Those centres should be commended for their efforts. Other centres however have not altered their approach to delivering the new Non Examined Assessment, maintaining a linear design process more reminiscent of the legacy specification.

In general, the majority of centres applied the assessment criteria consistently and fairly. There are instances where marks are generous, and in few cases, rather harsh on candidates where they may deserve slightly more. It should be noted that where there is more than one endorsed area in a centre, internal standardisation must take place and a common standard agreed. In some centres this was either ineffective or had not taken place.

Identifying and investigating design possibilities

It is imperative that candidates identify a broad range of problems/design opportunities arising from a contextual challenge in order to access the higher mark bands. These problems or opportunities should not be confused with the design brief that appears later in the task. More importantly presenting a design brief as a starting point narrows down the potential for identifying further opportunities for design. Centres where this was in evidence are advised to review the advice given to candidates as they prepare for the A level course and future AS courses. In most cases research and investigation was relevant but the views and values of potential users could be developed further. It is useful for candidates to have an actual client in mind who can inform and support them in the development of a product.

Assessment of this section was mostly fair and only deemed slightly generous where candidates had restricted their design opportunities at the onset of the task.

Developing a design brief and specification

There should be clear evidence within the folio that the design brief and specification has been arrived at having considered a broad range of possibilities and through thorough wide ranging research. Where candidates had only identified one design opportunity it is difficult to award high marks in this section when assessment band 1 refers to '*focussed on a single opportunity to produce a design brief*.'

Design specifications varied. In centres where the approach to the new course is fully understood specifications were more detailed and contained both objective and measurable criteria with the needs and wants of users clearly identified. Specifications in some centres were largely superficial with measurable criterion lacking in any meaningful depth. It is not sufficient to simply state the size or cost of a product.

Assessment of this section was mostly deemed fair but again a restricted initial approach does impact on the marks that can be awarded here.

Generating and developing design ideas

Some candidates had fully embraced the iterative approach to design producing some exceptionally high quality work throughout the development of design ideas which included extensive and thorough use of relevant modelling and testing of ideas. Where the evidence is clear, it is acceptable to award full marks. In fashion and textiles iterations could be in the form of a toile, seam construction variations, fabric manipulation, paint/dye effects or decorative techniques; whilst all candidates had some evidence of practical testing within their portfolios, the purpose of the iterations were not always clear or sufficiently refined to move the design forward. The focus of this course is 'lean design trimming away unnecessary elements' it is difficult to award high marks where the purpose of some iterations is not clear. Further development and refinement of this section is advised.

The technical details needed for a 3rd party to realise the idea is another area for further consideration. Where insufficient dimensions are given for a product it is difficult to see how this could support a 3rd party. That said assessment in most centres for this assessment strand was deemed mostly fair.

Manufacturing a prototype

Most candidates presented a reasonable sequence or plan for the manufacture of the product. In some cases however the processes lacked sufficient detail and would not fully support a 3rd party. If a prototype product has not been attempted it is understandable that candidates may not know how to fully assemble their product. Earlier iterations (toiles) support the development of a sequence for manufacture and should be encouraged.

Standards of manufacture varied greatly as did the application of assessment criteria. The top band for this section states '*a high quality functioning prototype*,' it is therefore realistic to expect appropriate construction and finishing methods would have been considered and used with some attention to detail. In a few cases, whilst the product was finished the quality was less than desirable. Irrespective of whether the product is a prototype or a fully developed pre-production product, a high quality finish is still expected in order to award the highest marks. In a few cases this was very generously awarded.

Centres must award marks for work that fits the descriptors clearly, so that moderators will not have to recommend adjustment of the marks awarded by the centre.

Analysing and evaluating design decisions and prototypes

Most candidates had included objective analysis and commentary as an on-going process throughout their investigation and development of ideas however in some cases this tended to be superficial lacking in any detailed and perceptive commentary.

Most summative evaluations were articulate and referenced the design brief and specification. Some modifications and improvements were offered by many candidates but to apply any merit to these the products need to be fully tested in situ if possible by the intended users. This was not always the case. As centres prepare candidates for the new A level course and for future AS courses it is advised they refine the approach to this latter part of the NEA. Assessment was mostly considered fair.

I hope that the feedback I have provided in this report will enable centres to reflect on the strategies and advice given to their candidates as they prepare for the 2019 Non-examined assessment. This report needs to be read in conjunction with the assessment criteria for the AS NEA.

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