



GCSE EXAMINERS' REPORTS

**GCSE (LEGACY)
DESIGN AND TECHNOLOGY**

SUMMER 2018

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DESIGN AND TECHNOLOGY

GCSE

Summer 2018

PRODUCT DESIGN

General comments

It is apparent the examination paper was again accessible and well received by the vast majority of candidates, demonstrating that although many elements of this course are demanding and challenging, centres and candidates remain well prepared for the Unit 1 Examination. It is evident that many centres deliver a well balanced course and thoroughly prepare their candidates for the examination; those centres are to be commended on their efforts. However it is also evident that other centres are not teaching the full specification with some questions that required specialist knowledge of Product Design being poorly answered. It is recommended that centres approach delivering the specification in a systematic and 'chapter by chapter' approach, following the content as laid out in the specification and examination paper. Centres are encouraged to use the Item Level Data to assist in analysing performance of individual candidates and the performance of the entry from the centre in order to identify effective areas and also any specification content that needs further development.

Q.1 Product Analysis

This question was answered well by the majority of candidates.

- (a) Most candidates gave appropriate responses to access the marks on offer however some candidates need to offer more detail in their responses and extend their answers.
- (b) The majority of candidates showed in depth understanding of the properties of ABS and were able to explain why it was a suitable material to be used for the mobile phone casing.
- (c) Most candidates were able to talk simply about the use of modern technologies in mobile phones to gain one mark; however, few were able to discuss how the technology had influenced the development of mobile phones to gain 2 marks.
- (d) The calculation was answered very well with the majority of candidates able to calculate the mean average sales to achieve full marks.

Q.2 General Issues

This question was more challenging than in past years.

- (a) Most gained 2 marks for correctly naming the R words that matched the statements.
- (b) A large number found this question challenging with many writing about the product rather than identifying who were the winners and losers and explaining why to achieve the higher marks.
- (c) In general candidates showed an understanding that LCA is about the sustainability of the product to gain 1 or 2 marks. Few candidates showed in depth understanding about the stages of the LCA to gain the higher marks.

Q.3 Designers

The essay question was generally answered well with candidates showing good understanding.

- (a) Nearly all candidates were able to name the designers to achieve 2 marks.
- (b) Most candidates were able to write a detailed description of both designers work including discussion about specific products and key features to gain up to 6 marks. However, a number of candidates did not clearly identify the innovative features of their products to achieve full marks. Candidates should be encouraged to read the question carefully and answer what is asked as some were writing about the influence that each designer has made which was not part of the question.

Q.4 Designing and Design Question

This question was generally well answered with some pleasing designs produced.

- (a) Nearly all candidates matched the correct stages of the design process to gain 3 marks.
- (b) Surprisingly the many of candidates struggled to name 2 important technical details that would be needed to manufacture a product. However, most were able to discuss key features that are to be included in a plan for manufacture to gain 2 marks.
- (c) There were many candidates totalling around 15 - 16 marks for this question. A well-rehearsed approach helps. Very few blank spaces, lots of good quality shading and accurate conventions.

Q.5 Commercial Manufacturing

Candidates struggled to pick up high marks in this question.

- (a) The majority of candidates struggled to correctly name the plastic moulding processes with most only gaining half marks.
- (b) Generally candidates were able to discuss the benefits of automated production but only few achieved the higher marks for discussing specifically why press moulding was suitable i.e. repeatability using the same mould.
- (c) Most candidates seemed to focus on the benefits of prototyping in general to develop a product to gain up to 2 marks. Those who achieved full marks discussed the specific advantages of rapid prototyping such as being able to produce a model quickly, test it, modify and make another.

Q.6 Materials and Components

There is was a marked improvement in this question this year with candidates picking up higher marks than in past years.

- (a) Most candidates were able to list the materials under the correct classification.

- (ii) Many found this more challenging and made general statements about recycling or landfill. Those achieving higher marks focussed on the reducing the amount of non-renewable materials used to protect our finite resources.
- (b) Most candidates were able to match the material property to the correct description.
- (c) The majority of candidates demonstrated a good understanding of thermo-plastics and thermosetting plastics giving extend responses that enabled many to gain full marks.
- (d) While there were a number of candidates who showed excellent knowledge about standard components, this is clearly an area that many do not understand with the majority of candidates struggling to pick up any marks.

Q.7 Tools, Equipment and Making

Candidates continue to find this question challenging with many lacking a depth of knowledge.

- (a) Candidates generally struggled to give the correct name for the equipment shown. In particular, very few were able to name the safety ruler and therefore most did not achieve more than 2 marks out of 3.

Pleasing response with most candidates able to describe a safety precaution and the use of the cutting mat.

- (b) Most candidates were able to discuss 2 stages when making the blue foam model but in many cases candidates were duplicating answers rather than identifying 4 different steps. Marks were awarded for marking, cutting, filing and sanding.

There were some pleasing responses to this question with most candidates showing understanding of the benefits of blue modelling foam being easy to shape and modify in the development process.

- (c) Most candidates made a good effort to answer this question showing a good understanding of the process with suitable sketches to achieve up to 4-6 marks.

Q.8 ICT, CAD, CAM, Systems and Processes.

Candidates showed good understanding in this area and generally achieved good marks.

- (a) Most candidates were able to match the software package to the task to achieve 3 marks.

Many candidates were able to discuss the benefits of using ICT to present a report including charts and graphs to achieve 2 marks. Where candidates have referred to PowerPoint presentation, no marks could be awarded.

- (b) A good understanding 3D CAD drawing was shown with most picking up at least 2 marks out of 3 for this question.

(c) The majority of candidates were able to name a suitable 2D CAD drawing package for 1 mark.

There was a clear lack of understanding on this question with very few candidates referring to the use of the 'rotate object' tool around a centre point after drawing the original shape. Very few achieved 3 marks here.

It was pleasing to see excellent knowledge regarding the benefits of CAM with most achieving full marks.

DESIGN AND TECHNOLOGY

GCSE

Summer 2018

RESISTANT MATERIALS TECHNOLOGY

General Comments

The paper was well received with very few enquiries about its content being received by the WJEC. As always, it was designed to be accessible to all whilst also being challenging to candidates of higher abilities. It appears to have reached these objectives with the accessibility of the paper being similar to previous years.

Questions 1(a) and (c), 5(a) and 6(a) were well answered throughout the cohort with questions 6(f), 7(c), 8(d), 7(e) and 8(d)(ii) proving to be very challenging to many as well as a good indicator of higher achieving candidates.

As in previous years, candidates generally started the paper positively, their responses to questions 1 to 4 often displaying common sense and design acumen. However, following a positive start, and in an alarmingly high number of instances, candidates struggled with the remainder of the paper. It remains true to state that the Centre's with the best performing candidates are those in which the specification has been systematically taught during year 10 and time has been found to revise thoroughly prior to sitting the examination.

The main areas by which candidates could improve attainment are:

- taking time to read the question thoroughly and then answering the question that has been set.
- not repeating the question in their answer which obviously gains no marks and only wastes space.
- reading over their answers to aid the clarity of their response. Far too many answers are rather superficial or poorly explained which would be apparent on a second reading.
- revising the subject content in areas such as materials and processes. Questions 5 to 8 call for specific knowledge which can only be understood and remembered through practical experience or study. Reliance on commonsense is not sufficient for these types of questions. This will be even more relevant in future as the nature of question papers under the new specification will be even more knowledge based.
- by regularly attempting past papers and practice questions to enable candidates to understand the depth of knowledge required and the difference between a basic and developed response.

Q.1 Product Analysis

- (a) Generally, an extremely accessible starter question. Most candidates scored 2 or 3 marks and often for confusing Sustainability and Safety considerations in part (iii).
- (b) Most candidates could propose some relevant reasons for the material choices.

- (c) The advantages of folding the desk and chair unit were mostly correctly identified. There was a good response to this question.
- (d) A fairly straightforward test of the candidate's numeracy with many calculating the percentage correctly.
- (e) Batch production – the question proved to be accessible with most gaining at least one mark but also a good indicator of higher ability candidates.

Q.2 General Issues

- (a) A good starter question, most were able to identify the recycling symbol with a basic outline of its purpose but not all identified PS as being Polystyrene.
- (b) Many were able to complete the missing step of the 5 step Risk Assessment.
- (c) There were mostly simplistic descriptions of the role of the BSI and quite a number of candidates misunderstood its role as being involved with sustainable issues.
- (d) A broad discussion type question on Sustainable design which allowed plenty of scope for candidates to demonstrate their knowledge or lack of.

Q.3 Designers

- (a) Many were able to indicate the 2 statements as being true or false.
- (b) All candidates showed some knowledge of their chosen designer in their essays although many continued to include unnecessary biographical information in their answers.

Q.4 Design Process

- (a) The majority of candidates were able to gain marks by identifying relevant research strategies and methods of communicating design ideas.
- (b) Many candidates were unable to explain the benefits of an accurate design specification.
- (c) The design question was understood by the vast majority of candidates. Very few misinterpreted the nature of the design challenge or did not attempt to answer the question. Candidates of all abilities sketched and annotated relevant responses and as a result gained marks appropriate to their abilities. Fewer candidates are neglecting to dimension their solutions and most label their materials with specific rather than generic titles.

Q.5 Commercial Manufacturing Processes

- (a) Many candidates were able to connect the descriptions with the correct Scale of Production.
- (b) Despite a vacuum forming machine being a very common piece of equipment in school workshops. Many candidates confused the purpose of its parts such as the platen, lever and even the heater.
- (c) This question on veneering was fairly well answered by the majority of candidates.
- (d) Candidates could either talk about the importance of Quality Control or its benefits in their responses.

Q.6 Materials and Components

- (a) There was a pleasing response here. The vast majority being able to select the correct metal form.
- (b) One out of two was the most common score for this question on classifying Thermoplastics.

- (c) Bolts and screws were the most commonly named types of temporary joining methods.
- (d) Many candidates were able to correctly name MDF or Hardboard in (i) but fewer correctly named Balsa or Jelutong in part (ii).
- (e) Lightness and strength were commonly identified characteristics of GRP. Fewer were able to gain higher marks by stating other relevant properties.
- (f) There was a disappointing response to this question. A general misunderstanding of how the carbon content of steel affects its properties was prevalent.

Q.7 Tools, Equipment and Making

- (a) Scribe and Try-square were commonly identified, Marking gauge and Sliding bevel less often.
- (b) Quite well answered by all candidates.
- (c) The basic elements of pewter casting were known to most, but few candidates demonstrated sufficient in-depth knowledge to gain 4 or 5 marks.
- (d) Injection moulding was often confused with other plastic production methods.
- (e) A disappointing response to this question was common. Other than reference to some form of heating process few answered this question in detail.

Q.8 ICT, CAD/CAM, Systems and Processes

- (a) ICT: Information Technology. 'Computer' was commonly and incorrectly offered for part (i). CAM: Computer Aided 'Manufacture' was commonly and correctly offered for part (ii).
- (b) The three wood joints (dowel, dovetail and finger) were known to many candidates.
- (c) Candidates infrequently outlined the basic elements of finishing acrylic in sufficient detail to gain the full three marks.
- (d) The first part of this question was well answered with most understanding the purpose of different coloured lines to denote engraving and cutting when laser manufacturing, The second part was not well answered. Despite this being a common workshop activity, very few candidates were able to discuss how a tight fit can be achieved between two laser-cut parts of a product.
- (e) The quality in response to this final question varied immensely between centres. Some students had obviously been taught about the annealing heat treatment process whilst others were forced to guess its purpose.

DESIGN AND TECHNOLOGY

GCSE

Summer 2018

SYSTEMS AND CONTROL

General Comments

This 2018 summer series represents the last year in which candidates will study this legacy specification in Systems and Control Technology. This year provides a similarly small cohort in this very specialist area of D&T, with most centres having delivered this focus area for a number of years. Candidate numbers remain low but very stable, and in terms of performance in comparison to other focus areas, candidates undertaking Systems and Control tend to be more able and achieve higher marks as a result. This year the examination paper was very well received and proved to be very accessible across the candidature.

Question 1 - Product Analysis

A very well answered question reflecting good product analysis skills. A small number of candidates missed the prompt to circle Batch or One-Off Production in part (i) which meant a loss of 1 mark for not reading the question carefully. Similarly, some responses were repetitive and too brief in some cases to access the full 2 marks available for part questions (c) and (d). Nearly all candidates provided the correct answers for the pie chart analysis and calculation.

Question 2 - General Issues

The 6Rs is well delivered in centres and candidates had no issues here. Problems occurred with the 'made from 80% recycled material' loop image. Many candidates stated that this was 80% recyclable. The 3 marks available for (c) and (d) were accessible, but only the very top responses gained the full 3 marks, mainly for writing an extended response covering 3 strands. It is another reminder that if there are four lines, candidates need to fill this space to justify the marks available. Shorter responses will not access the third mark.

Question 3 - Designers

Almost all candidates correctly identified Miyamoto and Dyson for the images. Again this year, a large number of responses sounded very close to previous mark scheme responses used in past papers. Whilst this is good evidence of preparation, candidates must read the current question carefully and ensure that their response answers this fully. Lots of biographical data does not represent a full understanding of the designer's products or the reasons for the success of the product.

Question 4 - The Design Process

The first 4 marks were virtually achieved by all a candidates, while the difference between on-going and final evaluation was not fully understood by some. The design question was well attempted by virtually all candidates. Having recently completed the CAT, candidates would have been well placed to access this question. Some candidates still fail to use coloured pencils to communicate ideas and concepts. This is a loss of easy marks. Some conventions are 'patchy' and candidates sometimes contrast the details presented in the block diagram and that in the circuit diagram, again losing some marks.

Question 5 - Commercial Manufacturing Practices

An excellent level of response for part (a) with the exception of continuous flow where some used mass production. In order to gain full marks for (b) a detailed understanding of reflow soldering is required. Some candidates mixed up wave and reflow, giving responses such as “a solder wave bonds the components to the pcb” which was incorrect. Advantages to the manufacturer were well answered by most candidates.

Question 6 - Materials and Components

The images were misunderstood by some who described A as a piston. The pawl and ratchet in C was also confused with a cam and follower by some. For (iii) even if the mechanism name was incorrect, most gained a mark for describing how the mechanisms would rotate anticlockwise and ‘lock’ when attempting a clockwise rotation. The solar buggy was understood by most. Nearly all named the photovoltaic cell (or solar panel) and understood that if more light was present, more electricity would generate a faster rotational velocity of the motor. Some very good responses for (b) (iii) included fewer teeth on spur gear, increased diameter wheels and adding additional pv cells. The transistor circuit knowledge proved ‘patchy’ where it was evident that some centres had covered this well, others not so. Many misunderstood the capacitor and its role of creating a delay. This was a weaker question for most candidates.

Question 7 - Tools, Equipment and Making

It is expected that tools, equipment and making would be a strength for most candidates; however knowledge and understanding here proved pretty hit and miss. Not all candidates could name the machine vice which was slightly disappointing. Some even suggested ‘clamp’. Most recognized the workshop signs and could define their meaning. The materials for (c) were quite well answered, most suggesting copper and HIPS. Response for (iii) were particularly disappointing where candidates again failed to focus on the question and lost the ‘temporary’ fixing aspect. Epoxy resin was a popular response, and also using a screw. A high percentage understood that the holes were to allow air to escape and pull the HIPS closer to the former, which was encouraging. Constructing the former was not well answered. Lots of candidates failed to add details such as ‘use PVA to join mdf layers’ which were basic expectations. Most indicated sanding of some sort, some mentioned finishers, but again this was quite inconsistent. Securing the probes was poorly completed, with lots providing weird and unexpected techniques, not fully accessing the 4 marks. This was probably the least accessible question on this paper.

Question 8 - ICT / CAD / CAM and Systems and Processes

The vast majority realised that (a) (i) were both false. Some explanations for (ii) were poor and did not specify why there were 2 power sources. Some even suggested that if the battery ran out, the mains would take over. Part (b) was a source of at least 4 marks for most candidates, but only the most able achieved all 8 marks available. Lots of errors occurred when labelling yes/no, and failing to do so. Many mistakes were made when connecting feedback loops, which suggest a lack of understanding, practice or both. Part (c) was very well answered where candidates suggested small size components with versatility to control various inputs and outputs as the main advantage gaining the full 2 marks.

In general, there were very few spoiled papers or instances where the question was left blank. A high percentage attempt rate normally provides at least some marks for each question and part question. Overall, it is slightly concerning that the ‘practical’ knowledge and understanding questions 6 and 7 proved to be the least well answered. Perhaps the time spent delivering the specification in KS4 could be reviewed to ensure that candidates know their way around the workshop and can apply problem solving thinking to achieve answers to given problems. A consideration could also be to reinforce tools and equipment in KS3 where the names and uses of everyday workshop articles could be covered very early as pupils arrive from Year 7, to establish a sound foundation from which to build understanding.

DESIGN AND TECHNOLOGY

GCSE

Summer 2018

TEXTILE TECHNOLOGY

General Comments

The style and structure of this paper is now very familiar to both candidates and teachers. It allows for a broad range of topics to be examined that effectively test candidates' ability, knowledge and understanding at GCSE level. The paper seems to have been well received with no obvious questions causing concern. The performance of candidates this year however appears to be slightly down on previous years. There was a significant increase in the number of whole questions and many part questions not attempted. Given the structure of the paper is such that it should be accessible to all abilities I can only conclude that the cohort this year is considerably weaker than in previous years but still predominantly female.

There were many examples of excellent papers where candidates demonstrated sound subject knowledge and had been well-prepared for the examination; those centres should be commended for their efforts. There was a marked increase in the number of candidates seemingly ill-prepared for the examination with a distinct lack of the most basic subject specific knowledge; many appear unable to answer questions in a way that would enable them to maximise on the marks available. Centres are advised to build in sufficient time over the two year period of study to teach the knowledge and understanding needed for the examination alongside the skills required for the new non-examined assessment task. This is vitally important as we move to a 50:50 weighting in the new Fashion and Textiles course.

The majority of candidates achieved between 45 and 65 marks for the paper. Candidates performed significantly better in section A which tests general issues when compared to performance in section B which tests specialist knowledge. This has been a common pattern in this paper for many years; it has not been addressed by centres and, as we move forward with the new course continues to be a major concern.

General weaknesses in candidate performance include:

- Failure to read the questions properly and not considering what the question is actually about.
- Repeating the stem of the question, then failing to demonstrate a specific body of knowledge.
- Failure to '*explain*.' An '*explanation*' requires a fact and an elaboration of that fact.
- General weakness in specific textile related knowledge.
- Poor literacy skills – responses often lack clarity with vague superficial answers.
- Lack of exam practice.

Question 1 Product Analysis

This question was accessible for the majority of candidates and most performed well. The main issue with this question was candidates' inability to fully analyse the product. Answers were vague and superficial, lacking any meaningful understanding of the product. Many candidates kept repeating the same points regardless of what the question actually asked.

- (a) Most candidates correctly identified 'children from 1 year upwards' as the products intended target market.
- (b) Some candidates had an understanding of the selling price being reasonable for the type of product. Many answers bore no reference to cost!
- (c) Candidates knowledge and understanding of textile materials is weak consequently answers relating to velour and proofed polyester were quite basic: velour is soft and proofed polyester can be wiped clean. Few extended their answers for full marks.
- (d)(i) Most candidates described the function of the litter bin but some gave descriptive answers relating to its appearance that were not worthy credit. (ii) Most candidates gave well written accounts explaining how the appearance and features of the litter bin supported the function, many gaining full marks.
- (e) The calculation question was generally done well.

Question 2 General Issues/Sustainability

The responses to this question were mostly good demonstrating sound subject knowledge.

- (a) Most candidates correctly identified the Kitemark and Mobius loop.
- (b) The main issue with this question was candidates repeating the same facts for all three sections and failing to consider each part question focussed on different aspects of the carbon footprint within textiles. Many of the responses were simplistic and did not address the issues facing manufacturers; many responded with reference to individuals.
 - (i) Energy: most responses related to use of renewables such as use of solar power in factories.
 - (ii) Transport: whilst many candidates understood the impact of a global industry in terms of the carbon footprint associated with trade many candidates suggested 'walking instead of using a car' – not an appropriate response on an industrial scale. This was a clear example where candidates had not read or applied much thought to the question before answering!
 - (iii) Materials: where candidates had related the carbon footprint to choice of material - natural versus manmade fibre, the impact during manufacture and disposal or the use of recycled materials, most scored high marks. Weaker responses referring to individuals rather than manufacturers/industrial scale did not gain credit.

Question 3 Designers

The majority of candidates responded very well to this question.

- (a) Most candidates correctly identified the designers associated with the examples of work shown.
- (b) The responses to this question varied. Many candidates produced well written answers and fully described and compared Stella McCartney's and Matthew Williamson's style of work along with the values that influence their design thinking in a clear, coherent and concise way. Clearly some candidates had been well prepared for this question. However too many candidates still regurgitate all the facts they know about each designers in over long responses that are not relevant to the actual question. Lists of collections both designers are associated with were not required and did not gain credit. Centres are reminded that *both* designers need to be studied for this examination.

Question 4 The Design Process

Performance was similar to last year; the question was accessible to most candidates although there was an increase in the number of design questions not attempted.

- (a) The majority of candidates were able to list at least two factors that are essential in knowing a target market. Some answers were not specific enough to gain credit.
- (b)
 - (i) The difference between primary and secondary research was fully understood by most candidates.
 - (ii) A number of candidates did not know what a disassembly activity is or its' purpose in product development. Centres are reminded that this is a very useful activity in developing candidates' knowledge and understanding of processes and manufacturing techniques which could be beneficial in practical activities.
- (d) Responses to the design question were mostly good considering the change in format from the usual fashion style question with most candidates scoring high marks. Some highly imaginative and creative ideas for soft furnishings were seen but these were in the minority. (i) Some candidates had not labelled or explained what the product was and therefore missed out on marks particularly where the design lacked clarity and could not be fully understood.
 - (ii) The mood board was used to good effect by most candidates however some designs were not considered inspirational. Few candidates were credited with full marks.
 - (iii) The creative use of colour was equally disappointing. To gain full marks for colour candidates need to show some creativity for example, more tones and shading of colours, or better use of complementary or contrasting colours. Using one or two flat colours gains a maximum of one mark.
 - (iv) Candidates struggled to name suitable style details few gained full credit in this part question. It should be noted that these have to be drawn correctly and be suitable for the product to gain credit. Some candidates confuse style details with decorative techniques.
 - (v) Most candidates only appear to know the names of basic textiles materials with many of the materials named not suitable for the product. Knowledge of materials is fundamental in a design subject; this aspect continues to be a major concern.
 - (vi) Overall, the quality of communication was of a reasonable standard.

Historically section B has demonstrated the weaknesses or total lack of specialist subject knowledge amongst candidates. This year it appears to be even weaker. Given the course is delivered over a two year period it is quite alarming when candidates do not appear to have any ideas on the most basic principles associated with textile technology!

Question 5 Commercial Manufacturing Practices

Performance was disappointing and clearly demonstrated a lack of specialist knowledge.

- (a) Most candidates correctly identified which statements were true or false.
- (b) Understanding of the advantages or disadvantages of the JIT system were not known. Most responses offered a description but did not fully explain the advantage or disadvantage.
- (c) Most candidates failed to correctly complete the sentences relating to a manufacturing specification.
- (d) This final part of the question was reasonably good with most candidates having some appreciation of the reasons for choosing one scale of production over another. Many were credited with full marks.

Question 6 Materials and Components

This question continues to be an area of weakness in candidate knowledge. Many candidates did not attempt parts of this question.

- (a) (i) Most candidates correctly identified which statements were true or false. (ii) Some candidates offered reasonable suggestions for weaving fabrics in different ways.
- (b) Knowledge of knitted materials was weak with many superficial answers with no real understanding. A few candidates discussed weaving which was the previous part question!
- (c) Where finishes had been taught knowledge of both calendaring and embossing was good with many responses credited with at least 2 out of 3 marks.
- (d) Candidates understanding of the cotton fibres ability to absorb moisture which in turn keeps the wearer cool by wicking away perspiration making it appear breathable is non-existent! From the evidence seen it is highly unlikely that anyone scored full marks for this question. Most answers were not worthy of any credit.

Question 7 Tools, Equipment and Making

Candidate responses overall were disappointing. Many candidates did not attempt most of this question.

Given Design and Technology is about designing and making products, performance in this question was particularly poor. Centres are advised to reflect on how effectively candidates are tested to reinforce knowledge and understanding relating to the construction processes and techniques used on the products they presumably make during the two year period of study.

- (a) (i) Most candidates correctly named the V and sweetheart neckline style details. Few knew cowl or draped neckline.
(ii) Princess line seams are not known.
(iii) The majority of candidates demonstrated some understanding relating to the purpose of darts and gained some credit.
(iv) Candidates do not appear to know what an open ended zip is. Given that they probably use one almost every day on coats and jackets this is surprising!
- (b) A minority of candidates were able to fully explain the purpose of both a French and a lapped seam and were credited with full marks where an appropriate example had been included. The vast majority of candidates displayed very little understanding.
- (c) Given the highly creative and decorative techniques seen in candidates CAT workbooks and products, it was disappointing to see such weak answers for this part question. Whilst most candidates named a stitched technique to embellish the skirt, they could not fully explain how to apply it. Few were credited with full marks.

Question 8. ICT, CAD, CAM and Systems and Processes

Candidate performance in this question was extremely poor. Many candidates did not attempt most of this question.

- (a) There were no issues with the first part of this question.
- (b) Answers varied in this question but full marks were rarely awarded. A number of candidates failed to read the question and described using the stencil to apply the design to fabric. This was not a requirement of the question. Quite simply the question

was about using ICT to produce the stencil. It would be reasonable to expect some reference to CAD/CAM, this was not the case.

- (c) This final part of the paper was perhaps the most disappointing. A large number of candidates wrote the same answers for both parts of the questions which clearly did not test the same topic!
 - (i) The vast majority of candidates did not appreciate that this part question was about using ICT to 'analyse' a new design proposals. Responses were either superficial or totally irrelevant. Few considered analysing results of surveys or questionnaires through the use of charts and graphs. A few made reference to online surveys but failed to elaborate further.
 - (ii) Candidates do not appear to understand the wider issues relating to the use of CAD for developing ideas. Too many responses relate to it being quicker or easier but do not explain further – how is it easier or quicker? A comparison would be needed to qualify the statement. Few candidates fully understood the question with full marks rarely awarded.

This last part question was set to challenge candidates but proved too much for many candidates who did not even attempt the question.

The disparity between performance in the controlled assessment task and the written examination continues to be a major concern that is **not** being addressed by many centres. In light of the changes to Design and Technology in terms of weighting for the examination and NEA (50:50) it is worth noting that in order to raise standards candidates also need to be familiar with examination style questions and how to answer questions in a way that will enable them to maximise on the marks available. Regular testing with exam style questions would be most beneficial to candidates.

This report needs to be read in conjunction with the examination paper and mark scheme.

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 examination.

DESIGN AND TECHNOLOGY

GCSE

Summer 2018

GRAPHIC PRODUCTS

General comments

The final Graphic Products examination for this specification looks like it has been well received. As with the examination in previous years it looks as if a similar amount of candidates attempted all answers, although it has been observed that the quality of responses to certain questions is not as high this year as it has been previously.

Section B of the paper was designed to test the breadth and depth of candidates' knowledge of the subject, but along with the mark scheme was intended to be more accessible for all. However the pattern of every other year of the specification has been upheld and the majority of marks are still gained in Section A. Many candidates have a good working understanding of certain parts of the course, but many candidates struggled to articulate their deeper understanding when answering questions designed to test the depth of their knowledge. There are two possible causes for this. It could be that there is not enough time being spent on the theory element of the course, and too much emphasis is placed on the Controlled Assessment aspect. Or that the candidates who are opting for the subject are those that would struggle to access the higher range of marks available to them in the mark scheme.

During the life of this specification, the examination has been worth 40% and the majority of marks were picked up in the controlled assessment. This will not be the case in the new Product Design specification where the examination and the coursework will both be worth 50%. Therefore, there needs to be more emphasis placed on examination preparation, particularly on the preparation to allow candidates to tackle questions where understanding is required with confidence. Last year the technical drawing aspects of Question 8 saw an improvement in the marks examiners were able to award, and this year seems to have continued that theme. 2018 however did see a dip in the quality of the graphics presented in the design question (Question 4). Many candidates struggled to design a logo for the hotel that would score more than 1 mark or icons for the hotel that would get more than half marks, partly due to candidates being poorly prepared for the examination by not having the correct equipment. Could I remind centres that candidates are expected to have basic equipment i.e. ruler, coloured pencils etc.

Question 1 - Product Analysis

- (a) (i) Some knew that the thermometer was the shape of the sleeping bag.
- (ii) This was well answered by most candidates, with many recognising it was cheaper to manufacture and easier to stand on a worktop.
- (b) (i) Most couldn't recognise that duplex board allows for printing on both sides.
- (ii) Lots understood why the thermochromic film was used.
- (c) (i)(ii) Many candidates recognised the benefits of including the thermometer to both the manufacturer and the consumer.
- (c) (i) The majority got the temperature range correct.
- (ii) Most answered this correctly, by employing a number of calculations to increase the length of the bag by 20%.

Question 2 - General Issues

- (a) Well answered by all although there were lots of candidates who called Repair, Refix
 - (ii)(iii) Good overall understanding of the environmental issues involved.
- (c) Most recognised the 'Kite Mark'.
 - (ii) The majority of candidates were not able to identify how the packaging regulations have changed the way packaging interacts with the consumer.

Question 3 - Designers

- (a) The majority were able to correctly identify the designers.
- (b) There were a lot of essays that contained basic content relating to the work of Saul Bass, which were well written. Again candidates offered lots of biographical information relating to the birthplace of Bass and where he was educated, this unfortunately gained no marks. Many could describe the style of Bass but again only a few candidates were able to pinpoint Bass' influence.

Question 4 - The Design Process

- (a)(b) Many candidates answered parts A and B of this question very well, with lots able to gain full marks.
- (c) The question this year garnered some very disappointing responses.
 - (i) Designs for the hotel logo lacked imagination; strong presentation and lots couldn't follow the design specification. Many responses lacked colour, some were drawn in a biro and a worrying number were left blank.
 - (ii)(iii) Was even more disappointing. The icons again lacked imagination most didn't have colour and were just basic line drawings that looked hastily finished, with many drawn with a biro. Worryingly though many didn't even draw icons for the intended task. Responses were seen for toilets, exits, smoking areas and reception, instead of what was asked for. When the question was answered well however the responses were excellent. This makes the weaker responses more disappointing as candidates truly lacked imagination.

Question 5 - Commercial Manufacturing Practices

In general terms, question 5 was well answered with many of the responses offered gaining half marks or more.

- (a)
 - (i) was done very well.
 - (ii) Was answered correctly by most.
- (b)
 - (i) Candidates needed to state that 'registration marks' for the name of the symbols. Responses to this question were mixed.
 - (ii) Lots were able to explain what had happened during the printing process for the symbol to look as it does in the paper, even if they could not directly name the symbol in the previous question.
- (c) Many were able to explain what debossing meant and how it could be achieved.

Question 6 - Materials and Components

- (a)
 - (i) Very few were able to identify the composite material.
 - (ii) Some were able to recognise that laminating can strengthen materials.
- (b)
 - (i) Candidates were able to identify complimentary and triadic colour systems, but an analogue system proved significantly more difficult.
 - (ii) The differences between tints and tones were well answered.
- (c)
 - (i) Most candidates were able to recognise a sans serif font, many stated that the script font was a decorative font and some confused the serif font with an old style font.
 - (ii) Many struggled to explain what would make an oldstyle font.
- (d) Many answered the microencapsulation question well. I expect the mean mark for part to be well over half marks.

Question 7 - Tools, Equipment and Making

- (a)** Well answered by all. Even if candidates couldn't recognise all three pieces of equipment they were able to identify at least two.
- (b)**
 - (i)** Many candidates were able to explain fully what the two pieces of equipment were for, although the 'Die Cutter' seemed to cause fewer issues than the 'Bone Folder'.
 - (ii)** Candidates were unable to provide us with a good explanation of the benefits of using a jig, one of the questions on the paper that was most disappointing.
- (c)**
 - (i)** Most candidates identified the correct types of software or were able to name a package that could be used.
 - (ii)** Most candidates referred to the difference between RGB and CMYK colour systems, but couldn't explain that working with colour gamuts or setting custom colours and palettes were beneficial to designers working on a computer.
- (d)**
 - (i)** The majority of candidates confused levels with layers, with many stating incorrectly that levels could be isolated for a designer to work on that layer of the design without altering the rest of the design, instead of identifying that levels referred to being able to adjust saturation, contrast, hue etc.
 - (ii)** Candidates were able to identify that images could be made clearer by adjusting the resolution.

Question 8 - ICT / CAD / CAM and Systems and Processes

- (a)**
 - (i)** Well answered by almost all candidates.
 - (ii)** The majority were unable to recognise the Gannt Chart or the Story Board.
- (b)**
 - (i)** A mixed bag of responses. There were a lot of very pleasing attempts at the button, the corners of the button were well constructed and the symbol was neatly and accurately drawn by some. While with others, we saw very rough sketches that barely gained a mark.
 - (ii)** Lots of candidates were able to gain 3 or 4 marks, with well-drawn one point perspective drawings, although some candidates confused one and two point perspective.

DESIGN AND TECHNOLOGY

GCSE

Summer 2018

COURSEWORK MODERATOR'S REPORT

General Comments

This 2018 summer series brings the legacy specification to a close. The Controlled Assessment Tasks within unit 2 this year represent the final time that we will see a 60% weighting for designing and making activities within our subject. The new GCSE Design & Technology Specification (Teaching from 2017, first Award 2019) is currently underway, with the candidates already working on the NEA (Non Examined Assessment) tasks released on June 1st 2018. This will be examined using the current visiting moderation process in May 2019. The new specification brings marked differences in Design and Technology for WJEC in Wales Centres, and Eduqas in centres outside Wales. Centres are reminded to ensure the correct specification; assessment criteria and documentation are used for respective delivery.

The moderation process this year provided reassuring evidence that Design & Technology remains a popular and exciting option within the school curriculum in many centres. There are, however, serious concerns in some centres where curriculum time appears to favour 'core' subjects and those featuring in the schools' performance measures, resulting in disruption to candidates during the academic year for multiple examinations in these subjects.

Administrative issues

Moderators experienced some difficulties when visiting centres during the moderation week this year.

- **Centres were not expecting the moderator's visit.**
Design & Technology staff should sign up to updates via WJEC/Eduqas to ensure that they receive up-to-date information regarding critical aspects such as moderation, NEA Contextual Challenges, assessment information and documentation. Examination officers are notified via email dates, times and names of moderators that will visit centres to moderate D&T samples. This information is not always passed to D&T staff, and as a result, some moderators arrived at centre unexpectedly, where the work for moderation was not displayed, and in some cases, not available. This causes issues for both moderators and centres, at an already difficult time, and can be avoided with regular updates from WJEC/Eduqas.
- **CAT workbooks used by candidates were incorrectly dated.**
The legacy specification requires candidates to work within the correctly dated CAT workbook for the year of the award. For the 2019 NEA moderation, there is no prescribed format, no workbook or dated sheets, therefore, candidates and centres are reminded to avoid pre-printed sheets, and complete tasks using an appropriate method that is comfortable and effective for the candidate, the centre and the NEA task. Guidance and exemplars are available via the website, and have been presented and discussed at the various CPD events delivered over the last two years.

- Ineffective internal cross moderation and standardising at the centre.**

Most centres deliver the legacy specification through multiple focus areas, but moderators regularly reported that only one focus area required adjustment and other focus areas were within tolerance. This suggests that staff are not effectively cross moderating multiple focus areas and candidate ranges, possibly assessing their own focus area in isolation. In May 2019, WJEC centres will display outcomes in Product Design, Engineering Design and Fashion & Textiles. The cross moderation of outcomes from these areas should be undertaken to ensure staff feel comfortable with the new assessment criteria, and also apply this in a consistent and collaborative way. Assessment in isolation can present problems. Eduqas centres will similarly produce the same variety of outcomes, albeit within the one subject title of GCSE Design & Technology. There still needs to be an agreed and standardised approach within centres studying the Eduqas model.
- Multiple outcomes in the sample are identical or very similar.**

Some moderators reported very similar outcomes within samples this year. The new NEA requires candidates to analyse and investigate the contextual challenges in far greater depth and breadth, and so there is an expectation that there will be no formulaic approach provided by teachers in centres, preventing candidates from producing similar outcomes. Centres are reminded to read carefully the NEA guidance within teaching specifications to ensure that candidates complete tasks within the regulatory constraints.
- Additional guidance, writing frames, adapted CAT sheets used in centres.**

There were instances this year where candidates' work appeared on additional CAT sheets, adapted CAT sheets, and writing frames. This is additional guidance and must be considered before credit is awarded to candidates. The new specification clearly defines the guidance and assistance that can and cannot be provided during the NEA. Centres are encouraged to familiarise themselves with this to ensure that there are no discrepancies during moderation in May 2019.

Controlled Assessment Workbook

- Pages 1 to 4.**

Candidates complete these pages fairly well, and the marks awarded by teachers are generally accurate and consistent. One area for significant change with the new NEA will be the breadth and depth of research and investigation required, and the requirement for candidates to identify a range of possible design situations, and to carefully consider the needs, wants and values of the user or client. This is a major change from the current report of research on page 1. Currently, page 2 specifications appear to have improved slightly over the life of the legacy specification. Candidates generally develop suitable criteria to support designing. Some factors could be developed into more measurable statements, which would be of greater support for candidates. The new NEA requires candidates to present fully developed and detailed specifications, which include detailed and measurable criteria. Initial ideas on pages 3 and 4 are generally well completed by candidates. The assessment of ideas is mostly accurate and consistent in centres. The new NEA required candidates to apply an iterative process to designing. There has to be evidence of a 'think – test – evaluate' approach which will provoke modelling, prototyping and trialling so that candidates can appraise their ideas effectively. There are resources and exemplars available for this, in addition to the materials presented at CPD events.

- **Pages 5 to 9**

The development of ideas is traditionally 'patchy' and varies centre by centre. There are still too many candidates presenting tables of information, rather than testing ideas in practice to see whether ideas need further development, rejection or function as expected.

The new NEA clearly requires modelling, testing and evolution of thinking in the same areas as current development pages namely: Form/style/function, materials and components, construction, sizes and quantities and finishing techniques. Due to the iterative approach, candidates are reminded that the development process is not a linear series of activities. Candidates may consider multiple starting points and 'think – test – analyse' in a concurrent manner. Candidates are free to concentrate development on the critical areas of their project work e.g. an engineering design candidate may focus more on the control system, where a product design candidate may focus on the quality of finish on a non-functioning concept model.

The new NEA also required candidates to closely consider the needs, wants and values of the user/client during development. It should be encouraged that every possible opportunity is taken to involve the user / client in evaluating ideas as they develop to ensure the product is successful in meeting the needs and wants of the target market.

- **Pages 10 and 11**

Candidates need to present their final concept in terms of visual/pictorial details, and also engineering / technical details. Candidates appear comfortable when completing page 10, but sometimes important technical details such as dimensions or CNC / CAD CAM data. If information is deemed critical for a third party to produce the product, then it should be presented on pages 10 or 11. The new NEA requires candidates to present final ideas / concepts in a similar way to the legacy specification.

- **Page 12**

Prior to manufacturing the final product, candidates should plan the sequences of manufacture, tools, equipment and processes, materials and components and also consider time, quality control and possibly health and safety and risk management. Planning is not a strength in most centres, generally due to high marks being awarded for work that does not reflect the marking criteria. The new NEA requires candidates to identify a 'logical sequence and achievable timeline' in which to complete the manufacture of their prototype. This is part of the 30 marks awarded for 'Making a prototype', and not a discrete mark for planning.

- **Pages 13 and 14**

Candidates are currently required to complete an extended written evaluation on page 13, and offer modifications and further developments on page 14 of the CAT. QWC is assessed on page 13, so candidates must be analytical, detailed and technical in their responses, with high quality spelling, punctuation and grammar. Modifications should follow-on from the evaluation and candidates should take the opportunity to sketch, re-design, and refine weaknesses in order to attend to the shortcomings identified.

The new NEA includes very similar evaluation and modification content, but also requires a specific focus on user testing, trialling the product with the target market for which it is intended. Also, candidates must seek the opinions of the target market and respond to their opinions following analysis.

- **M1 Range and difficulty**

As the title suggests, this mark is awarded for a variety of challenging practical activities. High marks should be awarded for candidates who demonstrate several different processes/materials, with complexity and challenge involved in the making. Wholly CAM products are difficult to match here, as are repetitive processes. As a guide, a blend of hand work, machining, CAM components where appropriate/applicable, assembled together to form a high quality product works best. This mark can sometimes be awarded generously.

- M2 Quality of Making**

There were plenty of high quality products viewed by moderators this year. It is encouraging to see candidates demonstrating care and attention to detail in the manufacture of final products. There is a visible link between KS3 activities and the work presented at GCSE level. Centres providing emphasis on quality of construction and high levels of finish access higher marks than those who do not focus candidates so accurately.
- M3 Dimensional Accuracy**

Moderators are considering whether the product is visually similar to the image/s on page 10, and that the technical details, sizes, dimensions, materials, processes and techniques etc. are evident on page 11. Issues that prevent high marks include poorly completed page 10 and 11, or the final outcome being submitted incomplete. High marks can only be awarded if the product matches virtually all the details presented on page 10 and 11. This is an area of generosity when centres assess outcomes.
- M4 Finish / Appearance**

Outcomes must be finished with care and attention to detail in order to score well here. Candidates need to attempt to achieve a 'shop bought' product finish. Outcomes that are finished well show a mature approach. In general, marks are fairly and consistently awarded here.
- M5 Function**

The function of the product should be evident in the final brief and also in detail in the Specification on page 2. Moderators sometimes struggle to clarify what a product needs to do in order to function. This is a shortcoming and prevents a high mark being awarded. Candidates need to structure the specification so that they know exactly what to include during design and development, culminating in the final product. The specification should be constantly referred to so candidates 'stay on track' and do not deviate. This will be far more visible in the new NEA.
- M6 Independent Working**

Differentiating between candidates who can work completely independently without support and those who require constant guidance should be reflected in the mark awarded here. A* candidates who produce products without teacher support deserve 15 marks. The sample presented for moderation normally contains a range of marks from high to lower, and as such, the Independent Working mark might reduce as the overall mark get lower. There are some contrary to this, but there should not be a blanket 15 marks for every candidates in the sample, but moderators sometimes report this.
- Page 15**

Candidates need to present 4 high quality images of their final outcomes, from different angles, with internal and external perspective, showing all details of their products. In some instances, WJEC / Eduqas may request to retain candidates' work for standardisation and awarding purposes. In this case, CAT workbooks are required but practical outcomes will not be needed. The 4 photographs should represent the product accordingly. Work will be returned to the centre by WJEC/Eduqas.

- **NEA making a prototype.**

The new specification does not include multiple marks for manufacturing. One 30 mark allocation represents 'Making a Prototype' and centres are encouraged to carefully consider the mark descriptors in order to ensure that candidates access the full marks available. It is intended that the outcome will be a 'high quality, fully functioning product' that is produced using appropriate materials and processes. The term prototype should not be misinterpreted to suggest that the quality of outcome could be considered inferior to that of the legacy specification.

Conclusion

The vast majority of centres deliver the CAT in a stimulating and exciting manner. It is clear from the moderation process that candidates undertake this activity within the parameter set out in the specification, and in accordance with regulatory information. Some small adjustments to centre marks occurred again this year, reflecting far more accuracy in centre assessment. There were a small number of positive adjustments where candidates were not quite rewarded sufficiently by centres for their work. Again this year, moderators witnessed some excellent outcomes demonstrating creativity and innovation. There is an increasing use of modern technologies including 3D printing, demonstrating that centres are moving forward with technology, upskilling candidates, and providing access to specialist materials and processes during design, development and manufacture.

This year saw a large number of entries for the Innovation Awards 2018, nominated by both moderators and centres. The event will showcase the very best examples of GCSE Design & Technology from centres in Wales. There will again be CPD sessions delivered by senior examiners, access to AS and A2 projects on exhibition, further and higher education institutions and a range of other stakeholders. Centres are reminded of the importance to bring pupils to the exhibition, where they have direct access to D&T projects at GCSE, AS and A2 level, and can attend sessions presented by Examiners and University lecturers on topics that will have an impact on the new GCSE specifications, examination and NEA tasks. Centres from outside Wales are also encouraged to attend the exhibitions as information relevant to Eduqas specifications will also be available.



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