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Moderators' Report/ Principal Moderator Feedback

Summer 2012

GCE Design & Technology (6GR01)
Paper 01 Portfolio of Creative Skills

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Principal Moderator's Report for 6GR01
Design Technology: Graphic Products – 2012

The coursework submitted by centres this year was in almost every single case appropriate to the requirements or suggestions made by the board. Even more so than last year, centres continue to submit work in three discernible sections, which were usually physically divided in one portfolio into product investigation, product development and product manufacture. This physical division of the sections appears to aid the candidates in recognizing the important differences in the individual assessments for each section.

Marking by teacher assessors was significantly more accurately applied than previous submissions, with centres clearly getting more familiar with the requirements of the course and the demands of the specification. The vast majority of centres supported their marking with appropriate annotation and this always helps moderators when establishing agreement with centres or writing E9 feedback to centres.

Moderators saw an increase of addition errors, incorrect transfer of some marks to OPTEMS from CABs and some CABs not signed by teachers and candidates. Moderators always try to resolve these issues on behalf of candidates but it is greatly appreciated when submissions are complete and marks are totalled and recorded accurately as this helps to ensure candidates get the correct results.

A few centres failed to label folders and pages clearly. This made the moderation process much more difficult for the moderators. Centres should ensure that each page in the portfolio is clearly labelled with candidate name and number, and title each page so it can be clearly connected with the relevant section of the coursework.
Electronic submissions must be in either PDF or PowerPoint formats or we cannot guarantee them being seen. A number of centres had to be contacted this year, to provide hard copies of the work as the electronic files could not be accessed. Each A3 page should be viewable in one without the need to zoom in to view individual words.
The fact that the majority of centres accurately marked their work this year has meant there has been a reduction in centres having problems in meeting the requirements for the highest assessment criteria. Indeed more candidates than ever before have accessed the highest grades in this year's submission. Some centres however, still face problems centred on candidates who had not met the level of demand required for an AS level submission. Despite this there has been an increase of work coming from centres that introduced elements of choice and diversity into their tasks encouraging individual work that fulfilled course requirements but allowed candidates to express their skills and talents. Many centres still adopt a formulaic approach where all candidates investigated the same product, were given a very prescriptive design brief and all produced the same manufacturing task, or all 'investigating' the same product. Where candidates are asked to investigate exactly the same product, they sometimes "share" information, which can show enormous similarities in content between candidates and will in severe cases, be referred to the compliance department at Edexcel on malpractice grounds. Centres are therefore encouraged to very carefully check work in these situations, to ensure that all candidates are submitting their own individual work.

Product Investigation

The requirements of the Product Investigation element of the course are now familiar to centres, the vast majority coping well with this section, producing commendable work. Most of the problems in this section still tended to be associated with the comparison of products that were too similar. In general we saw far less of products that were too complex, although one or two candidates still offer comparisons of buildings or stadia, of an enormously complex nature.

This section tended to be completed well, with centres often using the template system based upon the mark scheme sub-headings to enable students to focus their answers. There appeared to be less centres this year where all students studied the same products. We obviously recognise this as a useful and acceptable management tool, particularly in larger classes, however the work can often turn out to be formulaic and very similar. The utilisation of a wider range of products in the class for this part of the submission often helps the centre to discover different products, manufacturing techniques, and processes; thus in turn, extending the knowledge base for commercial manufacturing processes and aiding understanding for the unit 2 examination.
This section was again generally well presented by schools, the majority of centres following an established pattern of presentation. We saw an increase in the use of photographs from last year and this helped enhance the understanding of the work being presented. Where centres fail to submit an image of the product under investigation, it makes it very difficult to justify the answers submitted in the rest of this section.

As in previous years, where the candidates failed to perform well; the majority did not select an effective second product which was different enough to allow an informative comparison / contrast. This was a particular issue with the submission of perfume bottles, with moderators seeing a great deal of comparison being attempted between two blow moulded glass containers, with comments being made about the similarity of each product. It is difficult to justify marks allocated for a justified comparison, if the candidate is simply stating ‘there is no alternative’; hence this is a bad comparison to use.

The use of ICT helped candidates to organise and manage their work. Although the wholesale copying of information and then pasting onto sheets was again not helpful and centres should discourage this from the outset as the structure of the vocabulary and language used often stands out from other work submitted by the same candidate. As in previous submissions, the best work was seen where candidates had disassembled products in order to analyse the component parts in detail or at the very least had used or handled the products. Some candidates used only photographs of products to investigate, which severely limited their experience in this section.

Criterion A - Performance analysis

Yet again many candidates were successful at accessing the bulk of the marks in this section; it is noticeable that the very highest mark range was again less easily accessed. Candidates not accessing the higher marks did not give sufficient detail to earn the maximum marks; they failed to justify their choices. A few still dealt in generic terms and some gave the information about the function etc. and failed to apply it to the chosen items. Many candidates failed to consider the commercial manufacturing process when justifying the shape of products, tending to stick rather generically to the aesthetic or ergonomic properties.

As previously reported the most successful scenario for the majority of candidates was to set the evidence out as described in the assessment criteria; form, function etc. and then go on to detail each of the elements and attribute them to the products to be compared. The choice of a similar product to compare and contrast was again central to reaching the higher marks and many candidates failed to consider this fully, selecting products that were too similar such as a glass perfume bottle, compared to another maker of glass perfume bottle. Where candidates pursued these very similar products, opportunities to compare and contrast them were minimal. Perfume bottles in themselves can make excellent products if the contrasting bottle is made from a different material and a different manufacturing process.

Criterion B – Materials and components

Similarly to last year, there are still too many centres covering multiple materials in very generic terms rather than focusing on two different materials at the required depth. Possibly more candidates than previously missed out on the top marks by not directly relating the information

to the product and too few used good technical terms for the materials properties, we still see materials such as ‘metal’ or ‘plastic’. A significant problem this year was the lack of engaging in evaluating the materials advantages and disadvantages, a specific requirement of the mark scheme. Alternative materials were usually suggested, however their justification again failed to focus on the specific material properties to do the job required of the product. Sustainability was addressed by most candidates and was dealt with in a more informed way than previously, although we still saw some candidates failing to recognise the sourcing of certain materials as being environmentally unsustainable. Candidates sometimes failed to apply their analysis directly to their chosen product. When describing the environmental impact of using particular materials, many responses were generic and superficial, usually mentioning energy use, depletion of resources and problems of disposal, although the centres have clearly recognised much of this in their marking.

Criterion C – Manufacture

It was again, rarely a problem for a candidate to identify a manufacturing process, but it was increasingly uncommon to see that process fully justified in terms of the need for the process in the products manufacture. The perfume bottle may well have blow-moulding suggested as a manufacturing process, but few recognised the justification of the process in terms of; producing a hollow outcome, good replication, accurate products, and applying these justifications to the products specifically. There were a large number of entries that settled on a description of the manufacturing processes, indeed often copying wholesale from text or internet sources rather than justifying why the choice had been made. We also saw an occasional failure to offer advantages and disadvantages against the chosen processes in this section. The majority of candidates dealt with the impact on the environment, although many again slipped into talking about the material rather than the process. Transportation of raw materials and components for processing and assembly was largely overlooked again.

Criterion D – Quality

This part of the submission seemed to have improved in aspects of Quality assurance from last year but not quite the same improvements were seen in Quality Control. Many more candidates are now not just writing about Quality Assurance (QA) but are applying it to their products. Many centres understand the need for candidates to understand why quality is important; however, candidates still need to relate quality issues directly to their project to ensure that this section is meaningful. Most candidates submitted overall QA systems; they still find it more difficult to offer specific standards that could be applied to their products. There appears to be a good understanding of how quality control (QC) would be implemented. It is disappointing to note that candidates failed to directly relate their comments to the product instead reverting to talking in general terms, and failing to explain how a control check would take place, not just when it would take place.

Product Design

This section was considered the most inconsistent part of the portfolio by the moderators. The work was often too formulaic and restricting, with candidates submitting work of a simplistic nature, lacking in creativity. Whilst work was seen at the highest end of the mark scheme, there was also a lot of mediocre designing offered this year. It is very important that candidates know what to do and how to design. It was clear when moderating candidate work which candidates had been taught how to design. The benefits were clear to see in this section of candidates’ portfolios. The failure of many candidates to understand the design loop at even the most simplistic level is concerning and a recommended focus for improvement next year.

The vast majority of centres appeared to set topics that stayed within the safety zone of what they have been comfortable with in the past, some preferring to adopt a resistant material approach to their designing, by submitting designs for furniture or lamps. An increasing minority

of candidates had submitted work set from a group perspective. This is not a problem where the level of demand is not an issue, but some candidates found it difficult to demonstrate the designing skills required due to over simplistic tasks set by centres. It would appear that centres have submitted an increased number of architectural projects in this section, often not an easy way of accessing the marks available due the complex nature of the products being designed work.

We saw fewer projects offering a 3D and 2D element (though this is not required) and a fall in the number of multiple submissions in this area.

Criterion E - Design and development

The work submitted in this section was often simplistic and lacking in depth for this level. Body styling exercises were common (particularly, but not exclusively, in architectural products) and these failed to deal with the technical detail and sub-system design work required for mark at the highest level. The best all-round work came from candidates who added informed, succinct and useful annotation to designs, which demonstrated their understanding of materials and processes likely to be used in manufacture, and who presented summative evaluative statements focused on the set design criteria. Candidates should not be afraid to insert additional information at this stage to support their design work, such as technical information sourced from primary sources or the Internet.

Development of a final design proposal commonly lacked demand, variety of alternatives and a real understanding of what development should be, all too often being an explanation of what manufacturing will take place for a given product. Good levels of credit were achieved by candidates where they understood that development meant ‘change’, and that they should illustrate this by bringing together the best or most appropriate features of their design ideas into a coherent and refined final design proposal that met all of the design criteria.

For successful development there should be evidence of the final design proposal having moved on from an original idea through the results of graphical exploration and evaluation. It is not acceptable to simply take an initial idea and make superficial or cosmetic changes to it and then present it as a final developed proposal. Candidates should include as much detailed information on all aspects of their developed design as possible, as this is an opportunity to show knowledge and understanding of their design and make activities.

The use of modelling was almost always evident, but again not as a developmental tool. Often it was offered at the end of the process to ‘prove’ the final design would work. We suggest that centres encourage candidates to use the models made to improve designs and move the design forward. Similarly where CAD was used often the final design was not significantly different from, or improved on the early attempts. The best use of CAD was to show clear changes and make realistic presentations of how the changes will work in the final product, then assess them and choose the way forward to the final design. A viable working drawing in orthographic was then invariably supported with an isometric derived from the orthographic, even better with an exploded view to better illustrate how the components interact with each other.
The evaluation of this section was better completed similarly to previous year’s submissions, the work was often formally evaluated at the end, the designs were often evaluated as they progressed and centres often developed a formula approach to ensure this was completed. Evaluative comment can then accompany the development of the section and the specification be used to objectively evaluate at the end.

Criterion F - Communicate

Many candidates achieved good marks in this assessment section. Credit in this section can be gained from communication evidence throughout the design portfolio. However, the level of communication was very varied. Candidates, in some cases, had been coached to use a variety of media to good effect. The use of CAD is increasing and often of high quality and the vast majority of candidates demonstrated expert skills in using CAD programs they were familiar with, increasingly so with expert submission from 'Google Sketchup'. Although we are noticing an over-reliance of the use of CAD as a production tool for working drawings, these drawings are often presented inaccurately, upside down or without appropriate dimensions.
There was again too little evidence of candidates producing drawings and enough information for a skilled third party to manufacture a designed product. A disappointing feature of this section was again the widespread lack of basic drawing ability. It was obvious that some centres had spent time on developing skills in drawing and this was reflected in the work presented by their candidates, but in many other instances, drawing and sketching was weak and lacking in precision. The disappointing feature this year was the lack of use of modelling (3d or CAD) as a design tool - there was plenty of evidence of it as practice presentational piece, but little to establish change or decisions. Candidates were consistently failing to demonstrate a real understanding of the design issues, or the detail that drives the real solution, to the kind of problems being tackled. Where candidates had offered design work for products of a commercial or industrial design nature they tended to largely overlook the needs of manufacturing processes or the assembly of products.

Product manufacture

Making was a significant element for most candidates in eliciting marks and overall there was evidence of some good quality work, although a few centres allowed candidates to submit work that was barely of KS4 quality. Yet again even more centres submitted only a single product outcome, hence failing to demonstrate the range of processes and manufacturing techniques looked for. The most successful centres offered two product outcomes, often from different graphical pathways, i.e. architecture and packaging. Some had found demanding projects that allowed for a very wide range of skills in the single outcome, such as a demanding architectural submission that did not depend upon a single manufacturing output. Centres are increasingly finding new technologies to assist with the manufacturing process and we see an increase in the use of CAM outputs every year. This must always be balanced with other modelling skills and the candidates must produce a range of skills, not just repeat the same ones.

Criterion G – Production plan

This section was often completed to a good standard. Detailed production plans of the manufactured product appeared in most folders, with clear evidence of tools/processes chosen. A significant number of centres do not offer a sequence of key deadlines. This is often most usefully delivered via a Gantt chart, with broad deadlines offered for key components. A diary was often given as supporting evidence; although this did not support the assessment in this section it was useful as a guide for criterion H. Detailed times were occasionally missing from the plans, often blocks of days, or lessons were cited but these are considered too vague. We must see the candidates, in this section, using their understanding of materials and processes and not producing a record of manufacture; it must be planned in advance.

Criterion H - Making

Without doubt, this assessment section elicited the highest percentage of marks for most candidates from those available in any section. Many centres who have opted to set only one manufacturing task, have recognised that this does not always elicit marks at the top end of the mark scheme, and adjusted their marking appropriately, with less adjustment needed in this section. Where a task uses only a single material, it does not match the criteria for the higher

levels of response. The assessment criterion states that a ‘range’ of appropriate materials must be selected and those candidates should work with a ‘variety’ of materials, processes and techniques. In order to fulfil these requirements, the use of at least two materials and processes must be evidenced. It is important to note that candidates for Graphic Products do not need to submit a 3 and 2d element for this submission, but where they did it no doubt supported the understanding of the theoretical elements involved in other parts of this course and can enhance the range of skills seen in this section. This said, some products, packaging in particular would seem unfinished should they not have the 2d element (applied graphics) as well as the 3d element (packaging container).

Many centres embraced the ethos of this section and set manufacturing tasks that allowed candidates to experience a range of materials, processes and techniques, planned to develop skills that candidates could call upon when designing and making their A2 project, and some high quality outcomes were seen. Most centres set two tasks, which were complimentary in manufacturing output terms, hence providing a wider range of manufacturing processes than would normally be seen from one outcome. Naturally there were occasions when the level of demand was wanting and candidates were thus unable to access the full range of marks. Where highly controlled single tasks were set and all candidates in a cohort were given the same detailed working drawing, cutting list and materials, the outcomes were often difficult to differentiate between unless high quality photographs showing individual skill levels were provided. In much of the work presented, there were opportunities for candidates to make manufacturing decisions, such as choice of materials from those available in a centre, choice of joining techniques, use of certain processes, finishes etc, which would have given candidates more ownership of their work and helped in differentiation. The Level of accuracy and precision needs to be in-built to the project selected. Using a laser for cutting and printing did mean that some of the projects were unable to show a full range of skills and techniques. The work produced was unquestionably of a good quality but this is not in the spirit of the course or in line with the published assessment criteria which require candidates to demonstrate a range of skills and processes. It is vital that centres control the range of skills utilised in the manufacturing section, in order that candidates demonstrate a range of manufacturing processes. A simplistic guide is 50/50. Where candidates were given no choice of materials, for example when a task involved aluminium casting, they should still have an understanding of why that material was appropriate to the product under construction, i.e. good strength to weight ratio, printability, fluidity for moulding, good light conductivity, etc. This information should be offered as justification. Where it was carried out successfully, justification of selection was evidenced through annotation of photographs of making or in the plan for production. Where photographic evidence was shown of the making it made it much easier to credit a range of making skills, techniques and materials. Safety awareness was invariably demonstrated through statements within the schedule of making.

Criterion I – Testing

The submissions for this area were relatively well marked; many candidates are still completing subjective evaluations and leaving the testing as a minor aspect, but many centres have recognised this and marked accordingly. Centres need to be aware that a range of tests should to be carried out and these clearly explained, justified and put into context. In some cases this was not recognised by the centres and the work was generously marked because of this. Indeed some centres pointed to credit being given for annotation and evaluative comment given within the design work. This is not acceptable. This is a stand-alone section and should be a formal summative evaluation of the manufactured product only. With many centres it was obvious that this section was a very last minute activity with third party testing being very superficially applied. To enable the evaluation and testing to take place with some value attached, it is worth the candidate putting together at the outset, a manufacturing specification for the projects undertaken, care being taken not to offer comments about design constraints. Candidates then should apply tests to the specification points and use this data to inform their evaluation of the product manufactured. Some candidates failed to earn full marks as they carried out an evaluation solely from a personal stand-point. Where third parties were involved, often with a

questionnaire, results were fuller and more interesting in that they usually carried a broader spectrum of comment. The use of photographic evidence was invaluable at this stage and often conveyed the outcomes or experiences of testing at a glance. It was also a significant source of evidence of the use of 3rd party testing, where this had not been evident elsewhere in the portfolio.

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