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Moderators' Report/ Principal Moderator Feedback

Summer 2013

GCSE Design & Technology

Graphic Products (5GR01)
Creative Design & Make Activities

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Introduction

This is the fourth year of sitting for this part of the examination. The overall impression the moderators gained was that the submissions offered in this year's coursework were much more in line with expectations for the vast majority of centres. Indeed the work submitted and the marks sought were more in line with the board's standard than has previously been seen.

This year has been the first submission of the newly published controlled assessment tasks and some centres have submitted work that was published on the previous list, having not checked the updated list on the Edexcel website. The choice of project starting points is updated every two years and the students need to be directed to the new tasks each year. A number of centres failed to recognise that Pop-up cards and books are no longer on the task list. It is the centres responsibility to ensure that their choice of projects complies with the suggested list of tasks on the Edexcel website.

We also saw an increase in the number of Resistant Material (RM) type projects being submitted, the production or design of; clocks, lamps, candelabra, or wooden children's toys are quite within the remit of a GCSE RM student and are therefore not appropriate as Graphic Product submissions. A Graphic Product submission for this specification would have to be modelled because it is too big to be made in its real form or because it could not be made in the way it would normally be made due to high set up costs of machine tools etc. Hence a model of prototype can be submitted of a building, room interior, glass bottle, moulded plastic product etc. The only exception to this rule are point of sale displays, which are acceptable in the final format and do not have to be modelled.

Some centres made an attempt to hide the resistant material product by packaging it, this often failed as the student focused on the design and development of the RM product and utilised the packaging as an add on. This helped with some of the making marks but the designed product was still not chosen from the list supplied on the website.

Administration

Naturally as centres become accustomed to the Edexcel GCSE submission requirements, there are likely to be less issues with regard the administration of this part of the examination. In most cases, any missing or incorrect admin should in the first instance have been dealt with via the centres examination officer, with follow up feedback given in writing or through the moderator feedback report. It should be noted that the following issues were evident but as always there were a great many more centres who successfully navigated the administration of this exam without incident.

A significant minority of centres did not adhere to the Edexcel selection criteria, when compiling the sample. It is important to note that the submission of the selected students, as indicated on the OPTEM's form,

should be supplemented with the highest and lowest marked students, where they have not already been selected. Centres also need to replace any students that have been selected, but are no longer part of the centre entry, with any additional student (usually on a similar mark). Where centres had failed to comply with this important starting point they were contacted to complete the correct collating of the sample before any moderation could take place.

Some centres failed to comply with the instructions on the OPTEM's form, sending all copies to the moderator. In these cases the top copy needs to be sent to Edexcel, in order that the centre marks are entered on the system. The green copy is retained by the centre for their record of marks sent and the yellow copy should be sent to the moderator. A number of varying combinations of these colour coded submissions were observed by moderators, but centres should be informed of any errors in writing, usually on the moderator feedback report.

The centre mark record booklets (CMRB) were completed well on the whole. Centre markers completed the booklets as intended, including the annotation required for the evidencing of making skills undertaken in the manufacturing process. Very few failed to complete this section at all; those that did left their practical marking at risk of misinterpretation or corroboration by the moderator.

Annotation in general was often excellent and most moderators found the additional comments to be of use to them during the moderation process. A number of centres failed to sign the CMRB to guarantee the work is that of the students. These would have been contacted to verify the work after submitting the CMRB's. Any work that a centre cannot guarantee as the students own cannot be accepted for submission as part of this examination, without exceptional circumstances being applied.

The single biggest issue that moderators found a problem with the CMRB was again the failure for centres to add the marks correctly. These addition errors often jeopardised not only that student's mark but also how the rest of the centre would be treated during the moderation process. It is vital that any addition errors are corrected at source by the centre, so that the marks input by the centre are accurate, as addition errors could invoke adjustment with the final moderator mark and the incorrect mark that is on the system.

Photographic evidence for practical work was almost always clear and well documented for most students, there were a number that were taken at too great a distance, or were not clear for technical reasons. This has to be a more important priority for some centres. This is the opportunity for the centres to demonstrate clearly that the marks asked by the centre are evidenced in the photograph. Time needs to be set aside for this important part of the submission, ensuring that the photographs are going to clearly show how the marks asked can be justified against the products made. In the best cases centres provided evidence in the folder of the products being manufactured as an addition to the summative photographs in the CMRB, in

these cases it was often easy to see the processes that would not be evidenced in the final product.

With regard the actual design portfolios; centres are advised of the request that they aim to submit between 15 and 20 A3 pages for this part of the examination. Moderators have seen up to 80 pages submitted and 40 were not uncommon. In many cases, if students concentrate more time and effort on the presentation of more detailed work on fewer pages then the depth and quality of the work may well improve the performance of students in this part of the examination.

Additionally, some centres failed to label folders effectively, with student name/number or centre name/number. Admittedly they often physically attached the CMRB to the folders in an attempt to label the folders, however one of the first things a moderator will need to do upon receipt of the folders is to separate the CMRB from the folders, resulting in the need for them to label all the folders for the centre. Some centres also attached the CMRB's to the folders by very robust means; these were in danger of being ripped or torn when being separated from the folders, centres are requested to attach CMRB's loosely to securely bound folders, and to independently label the folders correctly.

The moderators reported that the majority of centres submitted work that was of a single design and make approach, with packaging being very popular as a submission. Architecture was also popular and often accompanied by interior design.

Where students submitted separate design and make submissions, students did well if they manufactured a more complex product like an architectural model and designed a different product. Designing architectural products proved quite demanding for most students. Some centres entered projects as part of the manufacturing that were themed class products. Indeed the class were set the same given product to manufacture. In some case there was too much teacher control in the tasks, leaving little for the students to interpret. **In this situation it is essential for the students to decide on the materials and manufacturing processes themselves, rather than be given the answers to all these issues by the class teacher.**

Design Activity

Analysing the brief

Students, who had completed a successful thorough analysis, often presented it in the form of paragraphs of writing with specific headings. This produced focussed and relevant questions about the problem being considered. Some centres were found to be quite often generously assessing this section, this tended to be where students produced simple mind maps of criteria rather than a detailed analysis of the brief. Mind maps are a good starting point to highlight the issues that may need to be considered, but the problems to be faced, must then be alliterated. Some students were also limited by an unclear design brief that did not clearly state the intention of the task. The majority of submissions saw the students write their own brief, where centre briefs were provided, the students often failed to develop an analysis in enough depth.

Research

The majority of centres generally assessed this section accurately. Centres that were generous tended to need greater focus on performance, materials, components, processes and quality when analysing existing products. There was far too much dependency upon the look of the product or the function, without reference to the key critical ergonomic information.

There was evidence of some good product analysis from centres that used the criteria laid out in the mark scheme and encouraged students to adhere to this. Weaker performances by centres analysed existing product in a less structured format. Issues of sustainably were addressed by some centres as a page of global issues rather than in relation to the product being analysed. A clear understanding of sustainability issues did not come across from many students. Indeed it may be more useful for centre to focus the sustainability issues through the analysis of the products and the materials they have used.

The single most common element that was missing again, was the lack of critical data, sizes etc. Many students designed products with no indication of key sizes or legal requirements; a POS with no product size, a package with no information about the necessary minimum legal information to be included on it, the design of the interior of a room without any primary dimensions as a starting point.

More successful centres clearly encouraged students to link their research to their analysis, specifications and design activities. In these situations the work often flowed more effectively and read more clearly, but specifically helped students to produce more realistic and effective design solutions. Where the analysis was weak and questions were not asked then the research often failed to link realistically to the problem.

Specification

In this section students again appeared to find it difficult to access the full range of marks on many occasions. In the best performances, the students made obvious links to the research previously undertaken. Here the specification was presented as a series of answers to the questions raised in the analysis, all too often though the points presented were not justified and lacked technical, measurable points. Students that used headings such as form, function, user requirements or other similar sub-dividers, tended to perform better than those without headings.

Some students lacked technical vocabulary when writing their specification, which limited their score in this area. Critical issues, such as product dimensions for packaging, were often not addressed; this also prevented them from devising successful methods of reviewing, testing and evaluating their work later in their projects. There was an increase in the use of table or linking diagrams to show how the students would test individual points, thus pointing out clearly their measurability.

Initial ideas

Similar to last year, many students produced a good range of design ideas. There was often greater detail regarding materials, processes and techniques however this replaced the detailed annotation explaining the actual idea and its subsystems; commentary to explain what the idea was all about. Quite often explaining what had been drawn rather than offering different non-obvious information.

Annotation to say how the ideas address all key specification points was rare; fewer students reproduced their specifications to show how the idea complied with the rules. Where students did reproduce the specification it helped them to produce decent evaluative commentary, although some just ticked a list or gave a salutatory yes / no response.

It was felt the range of ideas was narrow for some students with some centres not exploring all aspects of the product at the design stage, indeed the impression sometimes given was that centres are not teaching how to design or the strategies to design, relying too much on some kind of innate ability to design. This was particularly true of centres failing to explore the graphic component of the design which was often left to the development stage. There were some centres that submitted the design section with no indication of colour or graphics concentrating primarily on shape and form. Where annotation of designs was good students acknowledged specification points.

The majority of centres marked this section accurately however where marks were adjusted it was usually due to students annotation being of poor quality. Sizes were again not applied to ideas in many cases and the detailed understanding of materials, processes was not adequately addressed, if considered at all. Where students had considered this data it was often one word label or generic phrases e.g. wood or plastic.

Some centres were lenient in awarding higher marks to students who did not annotate their design work in depth; sometimes using only single words, often slim on technical detail and did not show evidence that they had utilised their research. Again commercial materials and processes were often lacking, students preferring to discuss materials and processes suitable for their prototypes rather than the real thing. Some centres produced a fairly limited range of design ideas and awarded high marks for them. It was disappointing that some centres did not encourage students to design and develop their graphics for their products where relevant. Again architecture and interiors appeared to be a stumbling block for some students at this level, often relying on body-styling exercises and failing to get into the detail of the issues.

Review

The reviews were completed successfully in general; however a significant number of centres did not emphasise this section to their students, resulting in work that could be disappointing with little reference to user group feedback and sustainability. Most centres adopted the specification table review, where students ticked yes or no with very little justification or highlighting how they tested their ideas. Formal written feedback was occasionally ignored. In order to access the full mark range in this section there needs to be a presentation of opinions, and review against the design specification.

The opportunity to gain and utilise user group feedback wasn't taken advantage of in many cases.

Communication

At the highest level of achievement a wide variety of well communicated skills was demonstrated, with good use of CAD. Centres are increasingly evidencing demanding CAD programmes and some excellent use of Google Sketchup for interior and architectural work.

An area overlooked by some centres in this criteria, was the use of annotation by the teacher to support the marking of the section, we were often left to guess the materials and processes that had been used. Centres also need to be aware that the assessment criteria for this section can use evidence in the development section as well as the design section.

Development

Of all the sections, this overall was still the weakest in terms of detail and presentation. Sometimes students work had a retrospective feel about how the final idea was made, as though decisions had been made already and there was no room for change. The specification tended to be ignored here and many outcomes were seen as the whole product rather than the development of the individual sub-elements. Far too few students looked at individual components, processes or sub-systems in deciding what was required to ensure a quality outcome was proposed.

Students performed well when they made use of their specification to develop their selected idea so that it addressed most points of the product specification. CAD modelling was often used as a presentational tool towards the end of the manufacturing process, not as a decision making developmental tool to aid the process of deciding what to propose, more of a practice presentation drawing. Traditional material modelling was often completed and evidenced but was not tested. Too often again like CAD, physical modelling was used as a presentational tool, rather than as a design strategy. Some students seemed to consider minor cosmetic changes as refined development, ignoring more important issues such as the locking/opening mechanism for a box or container.

To be successful in this section, centres need to teach students that this section involves change. It is not a section requiring a presentation of how a product is to be constructed; nor is it a section that only requires the presentation of a final solution. Students must look at the key sub-systems in the design, developing changes to those systems, how a box closes, how a bottle top can be applied securely, positioning and fixing of signage outside a building, etc.

The inclusion of sub-system consideration meant that the students had much wider opportunities to demonstrate decisions, technical information and communication skills. The modelling of a handle or perfume bottle body shape, can be quickly and easily shaped in Styrofoam and then reviewed. Bottle or package labels can be professionally reproduced on a variety of CAD packages from Photoshop to Word. The development of these sub-systems will not only lead to more successful outcomes, but will also provide more opportunities for demonstrating a variety of communication skills, but they should be use as exploratory tools, not just as presentational devices.

Final Design

The application of the assessment criteria by centres within the *Final Design* section was still generous for many students. Many omitted to identify materials and processes which had been selected. Some students used tables to justify their choices. Clear, dimensioned final designs, containing levels of information sufficient to enable third party manufacture, were rarely submitted. Occasionally cutting lists were used to justify or show the selection of materials and components.

The final design section is an opportunity for the student to present the chosen solution and justify its choice, giving clear and detailed information for a third party with some technical knowledge to construct the product proposed.

Many students failed to meet these requirements, particularly if they used a CAD drawing from their development section, and simply converted it to a working drawing. This often showed their lack of understanding of the needs of a working drawing and its purpose. Students would benefit from asking a third-party to look at their final design and decide if they could be made without referral to the designer.

Make activity

Production Plan

This part of the submission was much improved on previous years'. Students' production plans often took the form of a flow chart showing a sequence of stages of production. The flow charts often had the correct sequences, but quality control (QC) points were often generic phrases, merely suggesting what needed to be tested without suggesting how. The specific QC was rarely named or described, for example 'make visual check to ensure lid fits correctly', but was instead a question 'is lid big enough?' Most could organise their practical work into a series of processes but many did not cover all the requirements of the assessment criteria to gain full marks.

Many students produced Gantt charts and flow charts which included the same information rather than doing it one way in detail. There were less examples of retrospective planning.

Quality of Manufacture

In this section the centre needs to demonstrate to the moderator that the student has used tools, processes and equipment with precision and accuracy. The moderators found that when centres had provided good quality photographs clearly showing the step-by-step manufacture of the product, assessment of this section was usually straightforward, and centre marks were often easier to agree. However, where this did not occur, it was much more difficult to agree marks as evidence was not always available.

Annotation of the various stages was again often generic and did not make sufficient reference to problems or decisions about why a particular process had been used. Difficulty in agreeing the marks was found where students have been permitted to undertake simplistic tasks requiring only scissors and a glue gun, yet the centre may have allocated very high marks, with annotation in the CMRB sometimes referring to 'lovely outcomes' or other such comments of an unspecific nature. Clearly if a task is undemanding it cannot be marked at the level expected for a GCSE outcome, this was a significant factor in the moderation of some practical outcomes.

Witness statements on the whole were generally accurate and helpful. Some centres provided identical witness statements for all students; clearly this is not the intention of this part of the CMRB and indicates that the statements themselves are probably difficult to justify if they have been a straight forward 'cut and paste' rather than individually assessed work.
Despite the issues of demand, the majority of students undertook projects of an appropriate challenge. Where problems occurred, centres completed projects such as simplistic, packaging (without a bottle or container) or very simple interior design models. This lack of demand often meant that centres incurred an adjustment due to a lack of demand or too many repeated simplistic techniques. To a lesser degree there was occasionally an over-

reliance on one manufacturing technique, particularly the over use of CAM. A general guide for this should be no more than a 50/50 balance between CAM and more traditional manufacturing processes. An over-reliance on laser-cutting is not demonstrating a range of manufacturing processes.

Quality of Outcome

Here we are looking to see the quality of the assembly and finish of the entire end product rather than the processes involved in the individual manufacture of the components, although the quality, assembly and fitting of the individual components into the final product, is an essential aspect of producing the finished item.

This section is usually more accurately marked and evidenced than the previous section and that was the case this year. The inclusion of as many photographs in the folder as the centre feels necessary to justify marks, is encouraged. This is often assisted by photographic evidence submitted in the evaluation section under testing. Where good quality photographs had been provided, moderation was often straightforward.

Most students had produced some practical outcomes but not all were completed. Problems occasionally arose with centres over marking work that involved minimal skill and processes. There were some difficulties assessing identical make tasks particularly if not photographed clearly. It is important for the centre to offer very detailed justification of the marks in these cases in order that the marks can be accepted.

As previously pointed out, the demand and CNC issues did lead to some adjustments, as well as issue connected to the over-reliance of single CAM manufacturing outputs.

Health and Safety

Good quality annotation of photographs showing the step-by-step manufacture of the product regarding safety was helpful. No dangerous practices were evidenced. Many students included elements of safety and risk assessments in their folder work which wasn't really necessary but good to see.

Testing and Evaluation

In this section students are expected to evidence a range of tests. This did not always happen, indeed around half the students seen did not offer the testing as expected, just ploughed straight into the summative evaluation. The evaluation should focus on the summative comments around the testing of the final product and not credit work submitted in the design section.

Students would benefit from being encouraged to test against the specification to determine the effectiveness of the final product. ‘Tests’ were sometimes omitted completely or amounted to a user/client survey.

Students sometimes failed to focus upon the models that had been produced, referring to the real building etc. It would appear the many students had failed to plan for this section when writing their ‘Specifications’.
However in some cases the Evaluations were done well. Many centres evidenced student’s evaluation against the specification as expected, even if it was only based upon the students own opinions.

Third party opinions were evidenced to varying degrees, but were very much secondary to the student’s immediate thoughts. Evidence of user group testing was generally limited by most students.

A significant minority of students did not attempt this section at all. Centres are reminded that QWC marks are only awarded for work produced in this section. The work in this section should be assessed for its merits within the evaluation, mark scheme and minor adjustments then applied for the correct QWC assessment later. The assessment is driven by the evaluation mark.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:
http://www.edexcel.com/iwant to/Pages/grade-boundaries.aspx

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Pearson Education Limited. Registered company number 872828
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE