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Moderators' Report/ Principal Moderator Feedback

Summer 2012

GCSE Design & Technology Resistant Materials (5RM01)

Paper 01 Creative Design and Make Activities

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Introduction

This is the second full year of this specification which has seen overall improvements to candidates work and administration issues reduced across the centres. I would also like to welcome many centres that submitted work this year for the first time. In general this year we have seen the vast majority of centres have continued with the traditional approach to this controlled assessment by allowing candidates to design and then manufacture the candidate's conceptual product. However, it was pleasing to note that many centres took the opportunity to split the project in two. To allow candidates to be really creative and design /model one product and then to manufacture a different product that had the complexity and skills required at Key Stage 4. Centres are also to be congratulated on ensuring that candidates presented work that was within the five controlled assessment themes set by Edexcel.

My team of moderators have reported a number of factors that I would like to share with you in this document. It is hoped that everybody will be able to glean some information that will improve their centre's performance in future years.

Administrative issues

Centres are reminded that only the work of the requested sample on the OPTEMS should be sent to the moderator; in addition the work of the highest and lowest scoring candidate should also be sent if not included in the original sample request. The use of heavy folders should be avoided as this adds to the centre's postage charges.

The Candidate Mark record Booklet (CMRB) used by centres for each candidate has again caused some issues. These should be used to guide the moderator to understand how centre assessment has been awarded. It is vital therefore that each CMRB from the sample requested is utilised to the maximum. On the first page it should contain full details about the centre, candidate's number, name and task selected. There is also space for one high quality photographic image of the product made by the candidate. Additional photos are then to be inserted later in the booklet. On the next few sides the assessment criteria are presented and allow centres to mark/ring/highlight aspects of the criteria to produce a best fit for the work presented by the candidate. Centres should then page reference this work to allow the moderator to be directed towards it and then can compare the centre's assessment to national standards for accuracy and fairness. This works only if the candidate's work is clearly labelled, is sequential and consists of a folio where page numbering has been used throughout.

Centres have reproduced the CMRBs in a variety of ways, the best method contained a portrait style approach double sided printed and stapled at the centre for security. This made the booklet a very manageable document and allowed all the addition of marks to be accurately counted and recorded prior to transfer to the OPTEMs sheets or EDI sheets. In the extreme case, CMRB sheets were found to be out of order, upside down, not page referenced and contained arithmetic errors.

The Assessor Witness Statement allows centres to support the marks awarded for the skilled use of tools and equipment by the candidate during manufacturing stage. Evidence here could support assessment criteria and is viewed alongside the photographic evidence of candidate achievements. Finally the CMRB is to be signed by both the assessor and the candidate to authenticate the work submitted for assessment. Moderators have returned to centres any sheets missing such signatures for authentication.

Design Activity

Analysing the brief

This section was reasonably well completed by many candidates who used this section to really set the scene of the problem and offer some insight into who they were designing for. Generally marks were correctly allocated and centres appeared to know how to access the middle and top range of marks. The best responses were where the candidate had not only identified the key aspects (often in a spider diagram) for research, they had then explained why they were key and had then also informed the reader how they were going to gather the information required - the weakest candidates could barely outline the main points - they often left out sustainability. The spider diagram was used in many examples of the work moderated. The better ones used an approach which led to the formulation of a series of questions to answer in the research and had used the headings such as form, function, performance requirements, and sustainability. There were unfortunately still a lot of basic, generic spider diagrams which could have been applied to any design brief and as such do not have access to higher marks.

Research

In some instances candidates failed to produce selective and focused research tending to concentrate on materials and manufacturing processes with information on techniques they could use. This resulted in a great deal of padding and in some cases many generic A3 sheets were seen that added nothing to the understanding of the product in question. Mood boards were again seen that often bore little or no relation to the project being undertaken, these should be avoided. Where the work was of good quality, candidates produced succinct focused research concentrating on such things as the environment and location the product was intended to be used in. They contained details and dimensions of things to be stored such as wine bottles, CDs or cosmetic containers for example and a good thorough product analysis of an existing product. In very good work the product analysis was detailed and again related to the various criteria such as form, function, performance requirements and mentioned sustainability issues. Very little independent real life research is carried out by the candidates relying more on internet solutions with copy and pasting of images found. Questionnaires that seek user group feedback are to be encouraged but the questions asked should relate to the product in question and should help the candidate form ideas. Bland generic questions should be avoided as answers to them will not inform the decision process being carried out.

Specification

Many candidates produced specifications that were limited to the middle mark band as they lacked any sort of justification back to the research. Many candidates could enter the top mark box through comments that were realistic, measurable and mentioned sustainability. Where sustainability had been covered it was generally of a generic content as opposed to being specifically related to the product's life cycle and design brief. The centres that asked candidates to think about how they would test, check or measure each specification point at this stage were the most successful at generating strong specifications. This section is perhaps best achieved where candidates have a table with the specification point, a detailed justification, a measurable point/section, with a suggested test. This detail will help candidates in the final section where the product is tested and evaluated as it gives measurable points to test against. This work will also be used in the review section looking at how the initial ideas rate against the specification points.

Initial ideas

Most centres had directed their candidates to produce three or four different design ideas, other candidates produced eight to ten ideas but they lacked any real detail to be useful. Some candidates failed to expand their ideas here, when designing a table for example other shapes and leg configurations do exist to enable creative flair to shine through. Although many candidates will produce nice drawings of realistic products, they must annotate in more detail and add mini sketches to explain what materials might be used or indicate the processes to make them. Centres that have clearly taught their candidates to sketch and design well indicate that ideas were well annotated with a detailed understanding of materials, processes and techniques. Research gathered in the earlier sections needs to be better used in leading and formulating design ideas that relate to all key specification points. However in some centres, much of the work seen was too similar, showed limited creativity with little annotation to explain intention, materials or processes. It should be remembered that this section is for initial ideas. The finished product should not be identical to images produced here, there has to be room for refinement and development otherwise access to marks later could be restricted.

Review

The review stage was mixed across many centres. Some good work was seen where candidates had clearly reviewed their work objectively against the initial specification and had considered user group feedback and issues of sustainability. On too many occasions however, candidates simply resort to using tick boxes, smiley faces or a scoring system ranging from 1 to 10 for example to review their work. This is not subjective and candidates must be better guided in future series to undertake objective evaluations. A separate sheet is preferable rather than making comments alongside the initial idea sketches. Ideally user group feedback should be relevant to the product rather than using peers in the class for opinion.

Communication

This section is assessed across the whole project; moderators reported a varied approach to assessment here. Most centres had access to Computer Aided Design software and candidates had used it effectively. Other centres had looked at the overall presentation of the folder and the use of ICT within it to award marks here. Both are acceptable approaches providing that the ICT is appropriate and age specific skills are rewarded. It should be noted that the final design section would benefit from greater candidate skill in the production of working drawings, exploded views to help explain initial ideas and sectional views might be useful to explain manufacturing intentions.

Development

Generally this section tends to be poorly done with most candidates focusing on developing one single initial idea from a manufacturing perspective rather than amalgamating various elements of their initial ideas into a single final design proposal. This is a stage where candidates often fall down and loose marks. Often no significant changes occur between initial idea and the final design. Again candidates seem unclear as to the purpose of development or in some cases are producing development quality initial ideas early on with very little left to modify or improve upon. Candidates were either producing quality sketch work with real development from their initial idea; but no modelling in traditional physical methods / CAD or they produced models/CAD which was tenuously referred to. Candidates are very frequently unaware of the purpose of the models they are making, which leads to unclear comments and conclusions. Ideally in this section candidates will take us on a genuine developmental journey with justified modelling witnessed through photographs, along the way that will test/refine the initial basic design. The use of user group feedback to help refinements was often missing from candidate's work; this ultimately restricts access to all the marks available.

Final design

Some centres use development and final design as one assessed area, they are not and should be separate sections clearly labelled by the candidates. In centres, candidates would be better guided in future series to present a single final design proposal which then considered the technical details of the materials and/or component parts. Processes and techniques to be used for the manufacture of the final design could also be detailed on such a drawing. Final designs often lacked enough detail for a third person to construct the product. There were few well produced dimensioned drawings or cutting lists to aid understanding. ICT and CAD packages were seen to produce good results for the candidates but should contain more information as notes to assist interpretation.

Make Activity

If centres are using the two project approach to assessment, centres will need to provide candidates with working drawings of the intended product also specifications that are detailed, justified, contain measurable points/section, with suggested tests.

Production plan

This section produced a wide variety of responses, at best this was achieved through a tabular format where candidates had evidenced the correct sequential order for manufacture of the product, had included evidence of timings, had detailed specific and varied quality control checks that could be made for that stage of making and showed knowledge of which tools and equipment should be used. Some candidates presented this aspect as a flow diagram instead – they tended not to score as highly as the detail was not nearly as good. Candidates rarely provided information that was technical and detailed enough to enable someone else to work from their plans. Often quality control checks were stated at appropriate points but exactly how these checks should be carried out was not specifically explained. The title 'production plan' should indicate that this is a plan of future events but quite often this section was evidenced as a diary format reflecting past events. In some cases a photographic diary of construction was evidenced as a production plan when it could never be a predictive future plan.

Quality of Manufacture

Centres are to be congratulated on the whole for the high level of outstanding products that were made this year. In these centres candidates had produced work that was suitably challenging and had demonstrated a wide range of skills accurately performed and were appropriate for Key stage 4 candidates. Some work witnessed by moderators was not deemed to be at such an appropriate level for the KS4 candidates. Some candidates had relied too heavily on Laser or CAD/CAM produced articles yet were awarded high marks, reminder to centres about the 50% rule (see page 17 of the specification). In some instances candidates had provided no information or justification as to why tools, equipment and processes had been used and although the centres had correctly filled in the CMRB in some cases it was difficult to justify how marks had been awarded particularly at the top end when trying to judge accuracy and precision. Centres would be advised to guide candidates to include such evidence either via photographs or written comments to justify these high marks. Centres are also reminded that the Assessor Witness Statement will help moderators see what was completed at the centre by each candidate and what level of guidance they received during the manufacturing stage. These tended to be well used by most centres and the information provided was detailed and helpful.

Quality of Outcome

This section was again a pleasure to witness the varied and detailed work produced by GCSE candidates in centres. The level of complexity of projects, variety of materials used and pride candidates had in their work often was demonstrated well. Where moderators have seen projects that did not have the complexity and rigour for KS4 or had projects that included the over use of CAD/CAM equipment (such as laser cutting) it was much harder to agree centre assessments. This section was generally well marked by centres but it is important that some form of rank order and parity be established within centres to ensure that candidates are marked and rewarded fairly. Photographic evidence could be better used in this section to justify the award of higher marks where the product includes the manufacture of high quality component parts that are accurately assembled and well finished. The CMRB allows a variety of photographs to be attached as a record but also the candidate should include photographic evidence in the folder of the finished product they have made.

Health and Safety

This section was generally completed well; however some centres had assessed candidates in the lower mark band yet photographic evidence provided in the folder showed candidates working safely. Given that the teacher observation is sufficient to be able to award the full two marks available moderators generally agreed centre assessment here.

Testing and Evaluating

This section should be an extended piece of written work as the QWC marking also occurs in this section of the portfolios. The responses to this section varied widely across centres; at best this section was very detailed with a clear range of relevant and measurable tests with their results also containing useful sustainability issues and user group feedback. These tests were developed from the ones initially described in the initial specification points. The photographic results of these tests were displayed in a detailed, objective evaluation and future modifications proposed and were fully justified. Third party and user group evaluation was in evidence but for the most cases it lacked objective or detailed evaluative comments that were of use in assessing the merits of the product. In other cases a simple table of specification points and met/not met assessment occurred. This was often subjective especially with tick boxes being used or where one or two generic tests which were not objectively measurable against the specification were used. It is recommended that the user group feedback does not necessarily come from peer groups but reflects the thoughts of the target user of the product. Centres who had submitted a separate make project and who had not provided detailed specification points to complete end tests against for their candidates scored badly in this section. The need to assess sustainability issues was again not well done this year.

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