

Moderator's Report

Principal Moderator Feedback

Summer 2018

Pearson Edexcel GCSE

In D&T: Resistant Materials (5RM01/01)

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Publications Code 5RM01_01_1806_ER

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Introduction

This year has seen continued overall improvements to candidate's work across many centres. I would like to welcome the 50 centres that submitted work this year for the first time. It should be noted that this year we are seeing a large increase in administrative errors in the documentation sent from centres, that could be concerning either: incorrect samples sent for moderation, addition errors on the Candidate Mark Record Book (CMRB) or errors in transferring the candidate's mark to the OPTEMs forms. It has been identified that there was an issue with sampling this year and we apologise for any inconvenience caused due to late requesting of additional samples. 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 that candidate's conceptual product. However, it was pleasing to note that again many centres this year have taken 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. It should be noted that the given project must have the complexity and skills required at Key Stage 4 to access all of the available marks, many moderators reported insufficiently complex or demanding projects claiming inappropriate marks. Centres are to be congratulated on ensuring that yet again all candidates presented work that was within the five controlled assessment themes set by Pearson-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 both here, and with the centre specific post moderation E9 report, that will continue to help to improve the centre's performance in future years. It should be noted that the E9 report is available post results day from the centre's Examination Officer.

Administrative issues

Centres are reminded that only the work of the requested sample from Pearson-Edexcel should be sent to the moderator, if any requested candidates are withdrawn then centres should send a replacement portfolio. In addition to the sample, the work of the highest and lowest scoring candidates should also be sent if not included in the original sample request.

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. These documents should not be securely attached in a semi-permanent way to the candidate's work as they need to be separated during moderation. 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 the moderator can compare the centre's assessment to national standards for accuracy and fairness.

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 EDI sheets.

Due to the numbers of addition errors being seen by moderators, centres are requested that it would be good practice that work is double checked or proof read by another individual prior to despatch to the moderator. Although it should be noted that the mod entries in the CMRB are for Pearson-Edexcel use only.

The Assessor witness statement allows centres to support the marks awarded for the skilled use of tools and equipment by the candidate during the 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.

Assessment criteria: 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/brief, offer some photographic evidence, and offer some insight into who they were designing for (the client). Generally marks were correctly allocated and centres appeared to know how to access the middle and top range of marks. However, the centres that leniently assessed this section tended to be awarding marks for the design brief as well. This section is about **analysing** the brief, not problem solving to determine the need. 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 points and had then also informed the reader how they were going to gather the information required - the weakest candidates displayed insufficiently developed main points - they often left out sustainability issues. The best use of the spider diagram approach 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 seen from many centres, which could have been applied to any design brief; and as such do not have the required detail to access higher marks. We have seen a larger amount of statements this year that are more like specification comments rather than analysis comments, which are not appropriate here.

Research:

Research generally has improved this year with a greater proportion of centres making effective use of relevant and focussed product analysis that feeds into specifications and ideas/development. 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. The top range of marks went to candidates that clearly showed the progression through to their specification, and included details on each relevant aspect identified in their analysis. In the best cases, candidates were able to really independently research into the specifics of their own problem and this was most apparent with candidates who had real ownership of their design brief. The good news is that in general, the moderators have reported a reduction of generic "research materials" found in folios. In the past, this had resulted in a great deal of "padding" with many generic A3 sheets seen that added nothing to the understanding of the product in question. **Mood boards** (although reduced) were again seen that often bore little or no relation to the project being undertaken, **these should be avoided.**

Where it was good, 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) 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 asked of classmates should be avoided as answers to them will not inform the decision process being carried out.

Specification:

This section is perhaps best achieved where candidates have a table with the specification point, a detailed justification, with a measurable point/section. This detail will help candidates in the final section where the product is “tested and evaluated” as it gives measurable points to test the end product against. This work will also be used in the **review** section looking at how the initial ideas rate against the specification points. Moderators reported that some candidates produced specifications that were limited to the middle mark band, as they lacked any sort of justification back to the research. In general an improvement this year from previous years but there are still a lot of candidates not producing measurable and technical specification points and sustainability issues are often poorly completed. Many candidates could enter the top mark box through comments that were realistic, measurable and had mentioned sustainability. Where sustainability had been covered it was usually of a generic content as opposed to being specifically related to the product’s life cycle and design brief. Centres often set up templates or tables that allowed candidates to show measure (through testing) and justification (through links to the research). However, the quality of measurability was often dubious and this did lead to centres leniently marking this section. 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.

Initial ideas:

Most centres submitted good work in this section with many centres submitting excellent sketch work. Annotation of sketches however, was not generally focussed on the project’s specification points. Some centres had directed their candidates to produce three or four different design ideas; but other centre’s candidates might produce ten ideas plus but they often overburdened the candidate, lacking any real detail and taking up far too much time to be useful. Some candidates fail 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 indicate the possible joints/processes that could be used to make them, or explain what materials might be used to make the product. 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, score well. Research gathered in the earlier sections needs to be better used in leading and formulating design ideas that relate to all key specification points. Centres who submitted their work on CD occasionally did not do the work justice because scanned-in sketches were not easily visible in many cases.

Those centres that used only CAD here did not usually successfully generate a good range of ideas. A combination of CAD and sketch work should be encouraged. In some centres however 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 "**final design**" the candidate produces 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 moderators reported that the review stage was generally improving in the work seen this year, but that it remains a very mixed approach across many centres. If a centre approached it well then most candidates were successful. Those candidates who did not include measurable points in their specifications tended to not score highly here. Some good work was seen where candidates had clearly reviewed their work objectively against the initial specification as a separate sheet 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, to review their work often alongside the idea in question. 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 where more room exists to expand the thoughts and decisions. Reviews were often seen beside sketched ideas. If this is the case centres still need to annotate, including page numbers, the CMRB's to help identify where the marks are coming from. It has been seen this year that centres are awarding very high marks in their centres even if no user group feedback is presented to help review the ideas. Ideally targeted user group feedback should be used which is relevant to the product rather than using peers in the class for opinions. A summary of findings, might then guide the candidate into the development stage with better results both here and potentially in the development stage.

Communication:

This section is assessed across the whole Design project which is the first 50 marks; moderators reported a varied approach to assessment here. Most centres had access to Computer Aided Design software and candidates had used it effectively, the use of google sketch up or similar programs is becoming more prevalent. Some centres did not have so much access to CAD or ICT use in their portfolios which could limit candidate presentation. 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 and it is only in the first Design 50 marks part of the portfolio. This year, there were some examples of excellent presentation skills, unfortunately some centres fail to teach the basics of simple 3D sketching and the resulting work is far below that expected at GCSE level. Many centres are now making appropriate and skilful use of CAD and graphics packages to produce virtual models. It should be noted that the final design section would benefit from greater candidate skill in the production of working drawings, rather than just CAD representations of the product; exploded views might help explain initial ideas and sectional views might be useful to explain manufacturing intentions. Most candidates included photographs in the development stage (modelling) – at best these were clearly annotated and added much to the project's overall feel.

Development:

Generally this section still 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. Centres often mix up this section with the final design work and double mark candidate work, whereas the two sections must be separate. Some candidates are however, still 'jumping' to a completely new idea rather than showing the gradual development of an idea utilising the 'sub-systems' approach. This is a stage where candidates often fall down and lose marks. Often no significant changes occur between initial idea and the final design, often they are cosmetic only. 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 were tenuously referred to. Top scoring candidates used both CAD modelling and traditional 3D modelling in demonstrating their modifications, relating them to the specification and user group feedback. **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:

There was a relatively mixed performance in the final design section again this year. Some candidates still just produce a presentation drawing of their chosen developed design whilst others produce a fully dimensioned working drawing and a materials/cutting list or schedule. **Some centres use development and final design as one assessed area, they are not and should be separate sections clearly labelled by the candidates.** Centres should be advising their candidates that this section should culminate in a single final design proposal of their intended product, with information presented on how it might be manufactured. Processes and techniques to be used for the manufacture of the final design could also be detailed on such a drawing. Final designs seen by the moderators often lacked enough detail for a third person to be able to have a good attempt to construct the product from the information provided at this stage. Moderators reported that there were few well produced fully dimensioned drawings or cutting lists to aid understanding. ICT and CAD packages were often seen to produce good results for the candidates but should contain more information as notes to assist interpretation.

Assessment criteria: Make Activity

Reminder:

If centres are using the two project approach to assessment, centres will **need to provide candidates with working drawings** of the intended product to be made that is suitable for a KS4 project. **Also the specifications** that should be detailed, justified, contain measurable points/section, with suggested tests, as this is how the Testing & Evaluation with QWC marks are awarded. Failure to provide these specifications could limit access to marks in this section for the candidates.

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 suggested timings; **had detailed specific and varied quality control tests / checks** that could be made for that stage of making; and showed knowledge of which tools and equipment should be used. A significant number of candidates were awarded high marks in this area, but a lack of detailed information on **quality control tests / checks** took away from the work. Many would write that they “would check the sides are straight” but the top candidates would discuss how exactly they would do this. 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 in the restricted space available. Some centres who did a separate design then make activity had candidates include a set production plan and candidates could then not be awarded any marks here. Many candidates rather than detailing specific quality control checks explained methods of working that produce quality outcomes i.e. quality assurance rather than quality control. Candidates rarely provided information that was technical and detailed enough to enable someone else to work from their plans. Moderators reported a decline this year in retrospective work, the title “production plan” should indicate that this is a **plan of future events** but sometimes moderators reported that this section was evidenced as a diary format reflecting past events, this is not acceptable and would carry no credit.

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 candidate work, (less than in previous years) was still witnessed by moderators, as not deemed to be at such an appropriate level for KS4 candidates. Often this KS3 type basic work had been assessed highly by the centre. Although reducing in occurrences, some candidates had relied too heavily on Laser or CAD/CAM produced articles yet were awarded high marks, a reminder to centres is needed 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. Good sequential manufacturing photographic evidence is so important here to help support marks awarded by centres, through this we can see the candidate using a wide range of tools and equipment and can better assess the quality of what has been produced. 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

It 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. Very few “unfinished” projects were seen this year. 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 of the individual candidate's work 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 well done 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 occurs only in this section of the portfolios. **If a candidate produces no testing and evaluation work, then the QWC mark must remain at zero.** The moderators generally reported that the testing and evaluation section is improved this year with a greater proportion of candidates developing appropriate testing, although improved specifications would facilitate further improvements in this area. 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 often with good photographic evidence of the test alongside 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 tests in situ 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. The need to assess sustainability issues was again not well done this year by many centres; a life cycle analysis would perhaps help candidates cover the area of sustainability. Centres who had submitted a separate make project and who had not provided detailed specification points to complete end tests for their candidates tended to score badly in this section. Without this fully measurable specification, candidate's evaluations became generic and vague in some instances.