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Moderators' Report/ Principal Moderator Feedback

Summer 2012

GCSE Manufacturing

5MN01 Paper 01

Designing Products for Manufacture

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Unit 5MN01_01
Designing Products for Manufacture

General Comment

For this second submission series, the general performance of centres has improved over last year. Quality of Written Communications (QWC) is still rarely mentioned by assessors and plays a vital part of this unit, in particular. Controlled assessment appears to be becoming understood by more centres and the need for witness statements, photographs and other forms of evidence are becoming clearer.

The maximum score for unit 5MN01 is 50, and this unit carries 30% of the overall assessment weighting for the double award GCSE Manufacturing.

Administration

Most centres addressed all aspects of administration quite thoroughly. It is still apparent that a small number of centres made a few errors when completing the forms to submit their candidates' results.

The great majority of centres sent the required samples for moderation in accordance with the agreed submission date, allowing moderation to be completed in a timely fashion. Some small items required reminders sending out, such as authentication signatures, print outs of cohort centre marks, inclusion of highest and lowest non-zero portfolios, etc. All were generally addressed by return of post.

One element which would improve communications under such circumstances is the provision of a phone number for the examinations officer and an email address. The assessor/tutor contact details for a few centres were received on simple complements slips with the work, and any issues could be raised and solved in minutes.

A variety of A4 and A3 sheets of paper and card were submitted with many different types of binder being used. Centres should encourage candidates to use A4 sheets, preferably in portrait mode, with each portfolio fastened together using a single treasury tag through the top left hand corner. Folders, buckle clips, comb-binding, plastic sleeves and many other form of binding impede the processes of moderation and awarding.

In most cases samples were well organised and a Controlled Assessment Record Sheet had been completed for each candidate, giving a list of marks and a Controlled Assessment Tracking Sheet had been completed, providing the page number and comments of annotation which proved helpful to a moderator. The most difficult portfolios to work with are those that included no contents list, no page numbers, or no assessor comments. All candidates should be encouraged to provide a contents list together with page numbers. At least one centre had allowed the use of pencil for written work. This is to be discouraged, by candidates and assessors because work completed in pencil can be changed at any time after the work has been marked and moderated. The use of pencil for drawing and any graphs is acceptable, but ink, and preferably word processing, should be used as much as possible.

A small number of EDI (cohort score printouts) were not signed and dated by the centre. In a small number of centres, the forms had been incorrectly completed. It is strongly recommended that portfolios are internally moderated to demonstrate centre quality standards and that paperwork is checked before being sent to the moderator.

Assessment

QWC was hardly, if ever, mentioned or referred to by centre assessors.

There continues to be very little evidence of internal standardisation or second marking/quality control of assessment materials or assessment decisions in all the portfolios sampled at moderation.

Many centres made effective use of the bullet point lists given in the contents of the specification and assessed these accordingly within the assessment, but several centres appear not to have read or fully understood the requirements of the 2009 specification; more details are provided, below.

Witness statements were used effectively by some centres, but others made ineffective use of them, if at all. Assessment grids contain 'with limited guidance', 'with guidance', or 'worked independently', etc, and require an essential teacher witness statement and/or comments to help a remote moderator agree the score awarded, or not. Depending on what is being assessed, it is important that witness statements or observation reports are completed by teachers to authenticate candidates work and provide evidence that candidates have achieved the level of performance required in the assessment grid. In some cases good use was made of such documents.

In many cases good use was made of pictures and photographs. This and other similar types of media are to be encouraged together with more use of ICT. Word processing of portfolios, with import of images, is to be encouraged – preferably with the page orientation set to portrait mode, as is normal for written work.

In a number of cases the candidates may benefit from being shown how to interpret the evidence requirements more carefully for each mark band and at times it was difficult to find a real progression of the 'design for manufacture' processes across the mark ranges.

Criterion (a) – Analysing the brief

Centres are encouraged to include a copy of the given design brief with the moderation samples. This would allow moderators to provide feedback about how fit for purpose they are – ensuring that they will not be too brief nor too complicated for the GCSE requirements.

The candidates who seemed to score higher marks had clearly outlined client needs and key features of the product, as identified on page 11 of the specification, where 11 bullet points are provided for consideration. Several client briefs that were seen did need some attention. Many centres are encouraging a 'design & make' or 'product design' solution and not a 'Design for Manufacturing'

solution. Candidates need to be encouraged to consider the manufacturing options and details for their design solutions.

Criteria (b) and (c)

Some centres did not separate 'design specifications' from 'manufacturing specifications', and the detail of the given client brief is key to candidates' performance, here, but many were lacking sufficient detail. The manufacturing specification should reflect the manufacturing details needed to realise the product in response to the given client brief.

Criterion (b) - product criteria and material constraints

For the product criteria candidates need to consider: product performance, intended markets, maintenance, aspects of design and function which make the product suitable. For the material constraints candidates need to consider: selection and availability of material, stock sizes, properties, characteristics and performance, cost, handling, storage and aspects of safety and hygiene. Several considered most of these, but many considered only a limited amount and many focussed on the product alone.

Criterion (c) - production requirements and quality standards

Many candidates did not give a clear list of production requirements. In order to meet the higher mark ranges, candidates need to describe or explain these details, including some consideration of the most cost effective and efficient way to manufacture the product.
Much more information is needed about real quality standards, which can be addressed by including reference to meaningful tolerances, material specification, standard of finish, performance and whether or not the product would eventually be 'fit for purpose'. Centres may need to work with their candidates to ensure they understand the technical vocabulary – even words such as 'tolerance' appear to have been misunderstood by some candidates. Introducing them to real specifications would be beneficial.

Criterion (d) – ideas and solutions

Some evidence here was rather limited to basic and simplistic evaluative comments on the design idea alone, generally being concerned with the aesthetics. Candidates need training on how to carry out objective testing ideas against the constraints of the given brief. Most candidates produced a range of ideas, without much reference to the client's real needs and the specifications which they had developed.
In order to fully meet the requirements of this criterion each design idea should include information about how the processes of manufacture can be used to realise the product. Centre staff and candidates need to remember that this unit is about 'design for manufacture', not 'product design'.

Criterion (e) - Testing and selecting the final solution

Many candidates tended to use a scoring system to 'score' ideas against personal, or classmates' own opinions – this was mostly associated with aesthetics - not for how they addressed the client's needs or the specification – mostly because they didn't have an effective specification. Had effective

constraints been given at the outset in the client brief, then this criterion would have been much more straightforward for a larger number of candidates.
The final design solution should be tested against the client's design brief and the design specification, using a range of testing including comparative testing and testing of 'mock-ups' and models, which some centres did. This should lead to the justification of the final chosen design solution by evaluating the strengths and weaknesses of each solution, and/or provide comparisons of the design ideas which were rejected, including aspects of manufacture. In most cases there was limited evidence to meet either aspect of this criterion and in some cases there was little justifying evidence. In many centres the only form of testing was by the use of a questionnaire with their classmates or friends. Non-destructive testing and destructive testing were generally not considered by most candidates.

Criterion (f) - Prototype

The quality of the prototypes covered a wide range. Some produced card models, and unnecessarily included them in the portfolio, while others produced working prototypes. Annotated photos were used by most to good effect, but ICT use was limited to printing a photo, then stapling or gluing it to a hand written description, instead of word processing and importing and re-sizing the images. Few included any form of manufacturing records, making any credit for production quite difficult to justify. Candidates should be encouraged to take this opportunity to explain the manufacturing processes and any issues, throughout the whole process, showing how their final design solution idea addresses the client's brief as well as pointing out the most suitable manufacturing method to the client.

In the manufacture of the prototype, in many cases, it was difficult to find a manufacturing plan, as mentioned on page 13 of the specification. The plan should include details of materials, parts and components to be used, processes to be used, tools, equipment and machinery required, timescales, aspects of health and safety, avoidance of hazards, etc. Good use was made of photographs showing evidence of how materials, tools and equipment were used in order to produce their prototype. More detail could have been provided about the evaluation of and the justification for their final design solution.

Prototypes tended to be assessed leniently, mostly due to the lack of witness statements or real evidence of making and the emphasis on 'product design', not 'design for manufacture'.

Criterion (g) – Presentation techniques

Most candidates presented their ideas using 'PowerPoint' and some included photographs, models, posters, etc. Several candidates appear to have received poor, or no feedback. In some centres, feedback was generally limited to the candidate's presentations, not about their product or design solution, making responses to criterion 'h' limited and assessment was lenient and inaccurate in several cases.

In most cases, some evidence was provided that candidates had selected a presentation technique and had made a presentation. In a number of cases much more detail would have been helpful, particularly dealing with the chosen final solution.

Criterion (h) – Final review

A significant number of candidates produced evaluation details, but due to the lack of effective and appropriate feedback from their client, few went on to develop modifications to further develop their design solution, as is required here.
The candidate should evaluate the feedback for the suitability of the final design proposal and describe the modifications required to the design and manufacture of the product. In some cases much more evidence was needed to satisfy this criterion. More attention needs to be given to how the final design solution meets the client's design brief and the specification.

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