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Moderators' Report/ Principal Moderator Feedback

Summer 2012

GCE Design & Technology (6RM04) Paper 01 Commercial Design

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Principal Moderator's report on 6RM04

Resistant Materials Technology 2012

Whilst some outstanding work was seen from some candidates and overall the quality of work was slightly improved in comparison to last year, moderators reported that much of the work seen was disappointingly mundane and 'safe', allowing candidates to operate well within their comfort zones rather than challenging them to take risks to achieve the highest levels of response.

The ethos of the 6RM04 course is that candidates should work in a commercial manner, with a client or user-group to demonstrate how a professional designer might approach a design commission and see it through to a high quality conclusion, beyond something a candidate might want to produce for themselves. To this end, it is essential that a client or user group is identified at the outset and that they are consulted for their opinions and evaluative comments at particular points during the design and make process, providing feedback and discussion to arrive at a final design that is the best, perhaps compromised, solution for both designer and client.

Research and analysis

The vast majority of candidates achieved 2 or 3 marks in this criterion but hardly any scored 4. Although all candidates identified a client or user group, many failed to refer to them with any significance again, this meant that the commercial approach was all but ignored. Some clients were not quite believable, having identities created by the candidate designer, which is disappointing. It is important to have a true client who can be referred to, consulted and assist in guiding design decisions and it is all too obvious when no real client exists, resulting in superficial and congratulatory statements that have no substance or information useful in progressing the work in hand.

Many candidates gathered a lot of research that was irrelevant to their design problem and questionnaires hardly ever elicited useful information to inform the specification. Summaries of analyses and research information were rare and many candidates seemed to treat this section, criterion B and criterion C in isolation to each other when they are closely linked and underpin each other.

A significant number of candidates used bubble diagrams and mind maps as analysis tools, but this was done poorly, resulting in collages of words without any focus. Others employed questionnaires to gather information, but this strategy has no use in determining design needs when a candidate is working with a specific client; all relevant information should be gathered through a detailed client interview.

Many candidates presented research into materials, joining methods, finishes etc. which was of little use at this stage as no designing had yet taken place. Such research is better placed at design and development stages where it can be much more focused, relevant and selective. Where candidates do this, marks should be awarded in this assessment criterion and the pages where evidence exists in design folders should be indicated in teacher annotation. Too much research was generic and it appears that some candidates do not understand how to direct their efforts in this section. Where designs are focused on storing items for example, it should be basic good practice to look into the quantity of items to be stored, their dimensions, relevant anthropometrics, space available etc. fundamental information very often ignored by candidates.

At the end of this section, candidates should ensure that they have established design needs, carried out relevant and selective research and have identified key points to include in their product specification.

Product specification

This criterion was well addressed by more able candidates, but there were many others who wrote specifications that were not justified and not written under the formal headings of function, purpose, performance and user requirements. Sustainability was not well addressed and whilst some candidates made relatively tenuous and vague statements very few made insightful statements. Consideration of measurable criteria continues to pose problems and without these, evaluation throughout the design and develop stages and testing at the end of the making stage cannot be carried out effectively.

'Performance requirements' and 'User requirements' are important sub-sections of a product specification because this is where technical and measurable statements should be recorded, but many candidates failed to offer more than one or two specification statements under each heading. Often, statements were vague and meaningless, for example "It must look modern with a contemporary style" and "It should not be too big" are pointless statements and do not match A' level expectations.

Design and development – Design

Some excellent design activity was in evidence with candidates using a diverse range of graphic skills to communicate their ideas in a manner that shows genuine progression. However this was the exception rather than the rule and many centres still need to encourage their candidates to try and develop their initial design concepts more effectively on paper as designers. Many candidates merely drew shapes as designs and offered little graphical detail to show that they understood the sub sections of the design and the specific aspects of the problem. This 'body styling' was usually accompanied by very little information to demonstrate an understanding of materials and processes. A lot of candidates produced very weak drawings of an idea and then wrote copious notes to try and describe the idea, shying away from using graphical skills. Candidates who were in control of their work sought client feedback at this point, but many did not, once again ignoring the commercial approach to designing. It was also evident that in a significant number of instances initial design work related to the task being tackled, but after that point supplementary ideas quite often did not relate at all and sometimes the design brief appeared to have been forgotten altogether.

Design and development – Review

In the review of design ideas many candidates used a tabulated format quite effectively but the commentary, which tended to be extensive, was often repetitive. The vast majority of candidates reviewed their design ideas against specification points to establish their relative success, but not many compared one design against another to establish which one should be justifiable selected for development. Candidates should include a final summary of their review and identify which traits and characteristics from their ideas are to be taken forward into the development phase. Client input and feedback was usually brief and some candidates did not review formally against the specification, but instead made reflective comments against their ideas during the design section. Sustainability was often mentioned in the review, but hardly ever in any detail. Where candidates presented weak specifications, this section was inevitably weak too, as there was little guidance to evaluate designs formatively.

The important point about this section is that it is designed to encourage candidates to reflect on their design ideas, match them to their points of specification and receive feedback from their client before deciding on and justifying their choice of design idea and design features to take forward to the next stage in the design process.

Design and development – Develop

This section remains the most problematic for many candidates. Despite some excellent work being seen in some cases, it seems that centres are still struggling to get candidates to understand the nature of development work. The idea that a product continues to evolve through continued design input was only evident in the work of candidates who had explored the development phase principally through a graphic approach. Those candidates who had made extensive use of modelling tended to focus on construction details and for many, modelling was simply a hoop jumping exercise; it was very rare to find any planning associated with modelling and very rare to find any conclusions being drawn. It is notable that a significant number of candidates produced physical models that were so badly made that they could not possibly have informed the design process in any useful way.

Development was interpreted by many candidates to mean they should merely detail an existing design idea or make very superficial changes. As eleven percent of marks are awarded for work in this section it should be obvious to candidates that they should be adding value to any ideas that have been carried forward from initial concepts and this should reflect evaluations made and feedback gathered during 'review'
Continuing design input should be a feature of the development section, along with detailed information on all aspects of the developed design.

Development should produce a clear and detailed final design proposal that includes technical details of materials, processes, techniques, fixtures and fittings that will be used during product manufacture. There should be enough information present to enable a skilled third party to manufacture the product.

The final developed design proposal should be evaluated objectively against the points of specification and the client/user group needs, in order to justify the design decisions taken. Client feedback should be referenced in detail at this point in order to justify and clarify final design details that may be compromises between the candidate's ideals and the client's preferences.

Design and development – Communicate

Generally this criterion was accurately assessed by centres and most candidates were able to achieve well. The use of CAD was generally of high quality, but it was a little concerning to see a growing number of candidates using this time consuming technique to produce initial ideas which ought to be spontaneous and quick to generate. Where 2D CAD drawings were generated from 3D CAD sketches some dimensions were labelled to three significant figures and usually without units. Where such drawings are produced it is expected that candidates will modify them appropriately. Despite the general high level of CAD skills seen, many drawings failed to provide enough information to allow third party manufacture of the designed product.

Planning

All candidates were able to present a flowchart, table or Gantt chart showing an appropriate sequence of operations for the manufacture of their product. Hardly any scored maximum marks however, because statements were often undetailed and quality control descriptions were frequently questions such as "does it fit" rather than described checks. Timescales were sometimes missed out completely, or referred to as dates or lessons. A few plans showed a retrospective sequence of events, which instead of being a forward looking document became a diary of events.

Making – Use of tools and equipment

Marks awarded by centres in this section were generally accurate and some high quality skills and competencies were in evidence. However, despite demonstrating good skill levels, some candidates produced undemanding work that could not support the marks awarded by centres. Simplistic and undemanding work, no matter how well made using appropriate tools, equipment and processes, that is unchallenging, cannot elicit high levels of credit here, so centres must ensure that the work candidates embark upon is appropriate to the capabilities of individuals and will allow them to achieve their potential.
In this section marks are awarded for the skills used by candidates in manipulating tools and equipment. High level skills will demonstrate precision and accuracy. Consideration of safety awareness should be credited here, but any risk assessment illustrated in planning can be used as evidence.

Making

Generally, this section was quite accurately assessed across the cohort and most teachers approached this from a position of confidence. Where marks needed to be adjusted it tended to be because the task tackled lacked the complexity or potential to achieve at the highest levels. Where CAM was used this tended to be well-balanced by hand skills in most cases, but there are still some centres where over-use is encouraged, leading to disappointment when marks cannot be agreed.

Making – Quality

In general this assessment section was marked fairly by centres. Marks are gained here for the quality of the completed work and its component parts, whether it functions as it is meant to, whether it matches the final design proposal and whether it is appropriate to expected A2 levels of response. Some excellent work was produced but some tasks lacked the scope and potential to allow candidates to demonstrate their abilities. More ambition and risk taking would be of benefit to candidates at the outset.

Not many candidates justified their choice of materials for manufacture, which could be done easily through simple annotation of photographs or in planning.

The key to supporting teacher marks is for candidates to present a photographic manufacturing diary to illustrate skills and processes. A series of photographs taken over a period of time during manufacture is the ideal way to highlight skills and processes used and to provide examples of precision and attention to detail that may not be readily noticeable in an image of the finished product.

Most candidates presented a good range of clear images to support their practical work, but some photos were too small to illustrate technical details and some did not convey any useful information. It is better to have fewer, larger and more detailed images than many thumbnail size ones that are difficult to see.

Making – Complexity/level of demand

As was the case last year, some high level work was seen which was generally well marked by centres, but conversely some work was of mediocre quality which was rewarded generously, where candidates had produced well made products which demanded relatively low level and repetitive skills. Where it was in evidence, it was pleasing to note that most centres had restricted the use of CAM to the recommended 50% or less, allowing candidates to demonstrate

their personal manufacturing skills. Only a few centres allowed an over-reliance on CAM in their candidates work.

Testing and evaluation

In this criterion a significant number of candidates ran out of time. Many candidates did not have clear, measurable specification criteria to work from and it was quite rare to come across planned testing. A number of candidates wrote about testing but did not include any evidence of actual testing taking place. Evidence needs to be explicit in order to score marks. Many tests tended to be simplistic and subjective and lacked the objectivity of placing the product into real-life situations to test performance.

The client was not strongly in evidence in testing which is difficult to understand when candidates had gone to the trouble to either take the product to the individual concerned, or invite the individual into school. Client/user group evaluation, when it was used, was often no more than a series of congratulatory statements and it was rare to see perceptive comments made against points of specification.

Very few candidates identified improvements on the basis of their testing, and when modifications were proposed these tended to be cosmetic. Those candidates who tackled a life-cycle assessment did so quite well.

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