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Moderators' Report/ Principal Moderator Feedback

Summer 2012

GCE Engineering

Unit 6936_01

Applied Design, Planning and Prototyping

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Applied Design, Planning and Prototyping

General

The vast majority of work was appropriate to the requirements of this unit, allowing candidates access to the full range of marks. There was a wide variety of projects seen and it is pleasing to note that candidates are taking more responsibility for generating their own work, than being directed to centre set tasks. Typical topic titles were workshop tools and aids, maintenance equipment for servicing motorbikes and bicycles, tubular steel furniture, barbecues and many more.

Teacher guidance continues to improve and most candidates appear to have a better understanding of what evidence is required in each of the assessment criteria. A few projects were inappropriate, such as lighting projects that relied heavily on CAM for their production, simplistic and undemanding wooden furniture and 'models' of products that could not be tested against specification points written for the 'real thing'. A few joint projects were seen where candidates had shared work tasks, but had not shown explicitly what each of them had done, causing difficulties in awarding marks for each individual.

Assessment criterion (a)

Most candidates gathered research that focused on the identified problem but disappointingly a great number were not succinct and selective in their choice of information that could be used in writing a product specification. Where candidates should have been presenting information that was selective, succinct and focused on the problem in hand, research was often unfocused and general. Research should support the writing of a product specification and design ideas, so it is important that information is usable. The effort spent on gathering appropriate research should be balanced against the rewards available to ensure that valuable time is not wasted.

Specification writing was improved this year and most candidates were able to write well organised statements that were realistic, technical, measurable and justified. There were still significant numbers of candidates who failed to use their research to guide their specification writing. The point of writing a specification is to guide designing, but some of the work presented was generic and superficial, and lacked statements helpful to design and development.

Assessment criterion (b)

Once again, moderators reported that many candidates were not presenting work achieving high marks in this section. As always, some excellent work was seen, but this was in the minority. It is expected that candidates will present alternative ideas that are realistic and detailed with information regarding possible materials and processes that could be used were ideas taken through to

the manufacturing stage. Each idea should also refer to specification points to determine how successful or otherwise designs might be. Sub-systems of designs, such as mechanisms and other mechanical details should be explored graphically to show knowledge and understanding of problems and potential solutions. Some candidates presented a single idea which was quite detailed, then accompanied this with other simplistic and superficial designs to match the requirements of the criterion, which was disappointing as this section offers candidates opportunities to show their design competencies at the end of two years of study.

As part of development there was evidence of some good modelling and high quality working drawings, but there was often little further design input, limiting development to specifying materials and processes. Development means 'change', and this should be illustrated by candidates through their ability to bring together the best or most appropriate features of their design ideas into a coherent and refined final design proposal that meets all of the requirements of the product specification. There should be evidence of the developed design having moved on from an original idea through the results of evaluation against measurable specification points and peer feedback. It is not acceptable to simply take an initial idea and make superficial or cosmetic changes to it and then present it as a final developed proposal.

Assessment criterion (c)

Where evidence in this assessment section was presented, most candidates managed to gather information through formal and informal meetings, questionnaires and general conversations. Where meetings were formalised and well organised, useful information was gathered and was influential in further design development. However, in other cases information was forthcoming, but there was no indication of how this would be used to further design decisions. A minority of feedback recorded was simply congratulatory and unhelpful as a design tool.

Assessment criterion (d)

Most candidates are now adept at producing production plans that detail a sequence of manufacturing tasks in an appropriate order, mentioning materials and detailing processes and equipment used. The best examples of planning included quality control and health and safety issues. In a few cases, planning included the whole design and make process instead of focusing on manufacture only, and some quality control statements were given as questions such as "is it the correct size", which is not a check.

In this assessment criterion, planning for manufacture should include reference to time management, consideration of commercial methods of production including sequencing for batch/mass production and quality control. Health and safety issues should also be considered.

Where evidence in this section was presented, the consideration of relevant standards and regulations in the production of candidate products was not very well done. Where standards were identified, they were not usually accompanied

by an explanation to say how they would influence the production of the product.

Assessment criterion (e)

The vast majority of candidates were able to demonstrate good manufacturing skills to make products that functioned and matched their final design proposal. Some excellent work was seen in this section, where candidates used high level skills to produce work that highlighted precision and attention to detail in making complex and challenging products. Some candidates used good quality skills to make less demanding products, but did not meet the assessment criteria for higher marks because of the lack of challenge in the manufacturing task. Where this was the case, teacher assessors usually awarded marks appropriately.

Although most candidates submitted a range of good quality photographs in support of the marks awarded a number failed to submit appropriate images and some submitted no photographic evidence of practical outcomes at all.

Assessment criterion (f)

For most candidates the success of this section depended upon a strong product specification that could be used to test measurable points, so when a weak specification was presented, inevitably testing was not as effective as it should have been. Many tests tended to be simplistic and subjective and lacked the objectivity of placing the product into real-life situations to test performance. Third party testing was frequently used, but this often consisted of congratulatory statements which did not consider points of specification. Where it was used properly, it provided an excellent conclusion to the designer/client relationship and provided realistic issues for future modifications.

Administration

Most centres submitted the sample of work on time, but some failed to include authentication sheets. Most centres submitted marks appropriately, but some used copies of the assessment criteria photocopied from the subject specification and wrote marks on these. Where this occurred, there was no accompanying annotation.

Assessment within centres was generally good and teacher assessors should be congratulated on their knowledge and understanding of the requirements of this unit. Some candidates were awarded marks slightly inaccurately but consistently.

A few centre assessors over-rewarded work and should study each assessment criterion in order to familiarise themselves with the requirements of high level achievement.

Photographic evidence was usually good, but some centres are still failing to submit a range of images to show the quality of manufacturing skills displayed by candidates and the range of processes used by them.

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