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Principal Moderator Feedback

Summer 2010

GCE

GCE Engineering: 6936 01
Applied Design, Planning and Phototyping

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Report on GCE Engineering – Unit 6: 6936 Applied Design, Planning and Prototyping

General

Once again, moderators have seen a rise in true 'engineering' work that reflected scientific and mathematic influence. The vast majority of coursework was appropriate to the requirements of this unit, allowing students access to the full range of marks. Typical topic titles were trolley jacks, motorbike and bicycle maintenance apparatus, remote controlled buggies, cat flaps, visual aids for demonstrating mechanisms and scientific apparatus. A very small minority of projects were no more than well-made metalwork tasks. Teacher guidance continues to improve and most students appear to have a better understanding of what evidence is required in each of the assessment criteria.

Some outstanding coursework was seen, which was beyond the levels of response expected at A2 level and in these cases, students were expert in their fields of study, demonstrating true ownership of their work.

Most coursework was appropriate to A2 levels of response and moderators reported that there was in improvement in the 'engineering approach' where students showed evidence of the use of scientific and mathematical reasoning. Hardly any 'Design & Technology' products were seen this year, and work often featured scientific and mathematically justified elements. Areas of difficulty for some students were criterion A, where research was often unfocused and general and there was too much padding. As with AS work, 'design and development' was usually the weakest area of students' work and C 'discussion with peers or engineers' despite being better than in previous years was often either not attempted or completely misunderstood. Testing was often weak, where students failed to justify tests, or carry them out under realistic conditions. Evaluation was often subjective and did not include the views of a client or user-group. Almost all students used specialist ICT to aid their work and this resulted in some very high quality presentation.

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. Moderators complained of poor packaging of samples from some centres. Loose, unidentified pages, several pages in one plastic sleeve, folders containing manufacturers brochures, worthless in terms of credit, were all avoidable issues that added to the burden of moderation.

Assessment within centres was generally good and teacher assessors should be congratulated on their knowledge and understanding of the requirements of this unit. Some students were awarded marks slightly inaccurately but consistently, which is understandable where large numbers of marks are attached to some assessment criteria and the tolerance level is tight. 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 students and the range of processes used by them.

Assessment criterion (a)

As was the case last year, all students were able to gather information that focused on their selected project, but many were not very selective often including copious amounts of information that was of little use and amounted to padding. Research should support the writing of a product specification and design ideas, but many students failed to use the information gathered, rendering it a pointless exercise. It

is expected that students will refer to research in their designing and use it to inform the product specification.

Specification writing was improved, with more students including technical and measurable points that were justified. Many specifications were well structured under sub-headings and this allowed students to make statements in an organised and logical manner. Weaker specifications contained superficial and general points that could not be used as a guide to design and development.

Assessment criterion (b)
The feedback from moderators in this section almost exactly reflects comments made last year. Of all the assessment criteria, this is still the most problematic for many students. Despite some excellent work being produced in this criterion by some students, other work seen was often weak failing to reflect the assessment criteria statements. Students showed little flair in their designs or willingness to explore a range of ideas. Many students settled on a single design solution or simply added designs cosmetically rather than for true technical development.
Many students did use their product specification to evaluate design proposals against but this was sometimes superficial or brief, especially where weak specifications were in existence.
There was evidence of some good modelling, but there was usually little design development beyond specifying materials and processes. Development should reflect and illustrate change and a moving on of a

Assessment criterion (c)
It was pleasing to note that work in this section has improved significantly. Meetings held with peers/engineers to discuss progress were more focused than last year and information gathered was recorded and acted upon to improve final design proposal. There are still some students however who held discussions in general terms and no useful technical suggestions or review was achieved. Some teacher assessors were generous to students in this section, crediting any meetings between students and peer group as appropriate evidence for marks.

Assessment criterion (d)
In this assessment section, most students were able to offer comprehensive planning for production, but only a minority achieved effective descriptions of relevant regulations and standards
Plans for production were generally well done, outlining a sequence of events, use of processes and materials and referring to time and deadlines. The best examples of planning included quality control and health and safety issues.
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. A significant number of centres used templated sheets in this section with blank boxes for students to fill in.

An appreciation of the application of relevant standards and regulations to the production of students' work was not well done and many students offered no evidence in this assessment section, which is surprising as a study of standards and regulations is required as part of Unit 5.

Assessment criterion (e)
Many students were able to use this assessment section to demonstrate their synoptic abilities, bringing together the skills gathered over their course of study to produce,

work that was sometimes outstanding. At the opposite end of the scale, lower level, less demanding work often demonstrated good quality skills, 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 invariably awarded marks appropriately.
High quality photographic evidence is essential in conveying the quality and complexity of product manufactureol78t, and most centres are adept at producing ranges of excellent images in support of the marks awarded. However, a number of centres failed to submit appropriate images and some submitted no photographic evidence of practical outcomes at all. Where this is the case, centres cannot expect to have their marks agreed.

Assessment criterion (f)
All students presented evidence of some testing and evaluation, which ranged from thorough and well described field tests carried out under realistic conditions, to superficial, subjective statements that were no more than words of self-congratulation. In the best examples of testing and evaluation, students evaluated their products against the specification and photographed evidence of their field trials. User or peer group involvement and feedback was also in evidence, which led to realistic suggestions and designs for modifications. However, a significant number of students produced superficial evaluative comments, which did not involve third-party comment, or discussion with the client and were not set against points of specification.

Overall, centres are congratulated on their efforts in preparing students effectively for this unit of study.

Statistics

Grade Boundaries 6936 Applied Design, Planning and Phototyping

Grade	Max. Mark	*	A	B	C	D	E
Raw Boundary Mark	60	56	52	46	40	34	28
UMS	100	90	80	70	60	50	40

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