

Moderators' Report/
Principal Moderator Feedback

Summer 2013

GCE Engineering

Unit 6936_01

Applied Design, Planning and
Prototyping

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Unit 6936

Applied Design, Planning and Prototyping

General

As was case last series, the vast majority of coursework was appropriate to the requirements of this unit, allowing students access to the full range of marks. A wide variety of projects were seen, with fewer being selected from Edexcel's approved list, which is encouraging, typifying centres confidence in setting their own tasks or allowing students to do so.

Typical topic titles were: aids for the disabled; portable barbecues; multi-tools; maintenance equipment for servicing motorbikes and bicycles; powered mini-vehicles and many more mechanical projects. There was an increase in electronic projects, but as in 6933 students rarely had true ownership of the circuitry involved and struggled to describe in detail the function of the electronic circuitry and sub-systems.

Overall, choices of engineering tasks were appropriate and some centres were able to build on good practice gained over time to present the same tasks as in previous years, but to a much more refined level.

Moderators reported that marking in centres was more lenient than in recent years and despite assessments being generally consistent, disagreements occurred mostly in criteria 'b', 'c' and 'e'. There were of course those students whose work was exemplary.

A few projects were inappropriate, where for instance there was an over-reliance on CAM, leaving little opportunity for students to demonstrate a range of demanding and challenging skills; requirements for the awarding of high marks. Other examples involved the use of materials such as MDF or acrylic exclusively, which drastically reduced opportunities for 'engineering' input.

Administration

Feedback from moderators regarding centre administration reflects the same points as those recorded in previous years.

Most centres submitted the sample of work on time, but some did not 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 also noted the poor packaging of samples from some centres. Loose, unidentified pages, several pages in one plastic sleeve, folders containing manufacturer's brochures, worthless in terms of credit, were all avoidable issues.

Assessment Criterion (a)

As always, all students were able to gather information that focused on their chosen project and encouragingly the majority appear to have learned the value of selectivity and relevance when researching. There were some students however who still produced reams of general information on equipment, processes and materials, which was irrelevant as at this point no design decisions had been made to guide this aspect of research. Research should support the writing of a product specification and design ideas, but many students did not use the information gathered. It is expected that students will refer to research in their designing and use it to inform the product specification.

Most students were able to score well when writing specifications which were often well structured under sub-headings, enabling them to make statements in an organised and logical manner. Although many students structured their specifications appropriately, a significant number made only one or two statements under each sub-heading. Two important sub-headings are 'performance requirements' and 'user requirements' as this is where the technical aspects of an intended product are specified, so it is appropriate to list several points under these headings. Weaker specifications contained superficial and general points that were non-technical and could not be used to guide designing or to check on the viability of ideas.

Assessment Criterion (b)

Once again, moderator feedback on this section reflects the weaknesses of many students in exploring and presenting a range of alternative design ideas when considering the problem in hand.

Some high quality work was produced by a minority of students, who demonstrated an advanced understanding of design needs and displayed high levels of knowledge regarding materials, processes, techniques and mechanical systems, but it was the exception to see such high level design skills being displayed. Designs were often simplistic, repetitive and lacking sufficient technical detail. Students would often make statements to say a particular component or mechanism adjusted, turned or slid, but failed to show graphically how this would be achieved. Knowledge and understanding of materials and processes was generally lacking and this prevented many students from performing better in this assessment section.

Many students were happy to settle on a single idea and add little or no development to this before presenting it as a final design proposal. There was little flair or attention to detail seen in most designs, or willingness to explore sub systems. Not many students referred to their product specification to evaluate design proposals and many appear to treat research, specification writing and designing as completely separate and unlinked activities, when they underpin and support each other.

There was evidence of some good modelling, but there was usually little design development beyond specifying materials and processes.

Assessment Criterion (c)

This criterion produced work of very mixed quality. In the best examples students held well organised and structured formal meetings where technical issues were discussed and a summary of finding was produced stating how

feedback would influence product development. In other examples, discussions were generic, unfocused and elicited little useful information. Many students were highly rewarded for minimal evidence. Any form of constructive criticism and feedback was rewarded, however subjective, when the requirement is that students should gather useful and constructive feedback formally from peers or experts to assist in developing their final design proposal.

Assessment Criterion (d)

The vast majority of students were able to produce appropriate planning for the manufacture of their product and lots of centres provide template planning sheets to assist in this section. Evidence of planning usually outlined a sequence of manufacturing events, identified processes and materials and referred to time and deadlines. The best examples of planning included quality control and health and safety issues.

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 6935.

Assessment Criterion (e)

As is always the case, some excellent standards in manufacture were seen where students demonstrated a range of high quality skills and competencies in challenging situations. A significant number of students produced high quality outcomes which were over-rewarded because despite being well made and finished, the skills required were low level and undemanding. In the past, where this was the case, teacher assessors invariably awarded marks appropriately, but this year has seen a move towards leniency in some such cases.

High quality photographic evidence is essential in conveying the quality and complexity of product manufacture, and most centres are very good 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.

Assessment Criterion (f)

Some testing was carried out by all students, which ranged from thorough and well described field trials carried out under realistic conditions, to superficial, subjective statements. Realistic testing should focus on the performance and quality of the completed product and should be based on the measurable points written in the product specification. Photographic evidence is useful as evidence of tests carried out, but this should be accompanied by detailed descriptions of how tests were carried out and what the results were.

User/peer group feedback was in evidence, which sometimes led to realistic suggestions for modifications. However, a significant number of students produced superficial evaluative comments, which did not involve third-party input and were not set against points of specification.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

<http://www.edexcel.com/iwant to/Pages/grade-boundaries.aspx>

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