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Moderators' Report/ Principal Moderator Feedback

January 2012

Principal Learning

Manufacturing and Product Design Level 3 Controlled Assessments

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Introduction

In this series candidates performed, for the most part, to a satisfactory standard. This has been the case over recent series, noticeably however, in some of the internal units, there is evidence that some more able candidates are beginning to demonstrate the type of performance characterised by the higher mark bands and are being rightly rewarded with marks approaching A*.

Most aspects of administration for the internal units were adequate, with the correct samples being provided. Generally, each candidate and the tutor signed a Candidate Record Sheet (CRS), and centre marks were recorded correctly on the CRS. However these sheets are not being checked sufficiently and a few are missing important details. In some cases there is a lack of authentication of the CRS.

Most candidate work was organised in such a manner that it was straightforward for the moderator to locate the evidence for each learning outcome. In many cases there is an issue with assignment briefs not being provided. This would assist in the moderation process and is a practice that centres should consider.

As in earlier series there are some issues with the annotation of candidate work, although there is clear evidence of improvement here. Assessors are reminded to annotate work, to clearly identify where marks have been awarded, this should be linked to the appropriate marking grid and mark bands, with page numbers noted on the CRS. Indications such as LO1 (MB2), LO3 (MB1) etc. are very helpful to moderators.

Although marks are moderated for Marking Grid A only, some Marking Grid B evidence was noted including good use of observation records. In some cases comprehensive portfolios were submitted including assignment briefs, which help to inform moderators of what it is that candidates are being expected to produce as evidence.

Unit MP303_01

Supply Chain Management in Manufacturing

During this series, the internal marking for this unit was at an appropriate standard. As previously noted a single power-point presentation is a somewhat ambitious approach to fully evidencing this unit.

Learning Outcome 1

Each mark band contains three elements and candidates are awarded marks based on their depth of knowledge of these elements. Evidence seen predominantly consists of outlines (Mark Band 2), however these were insufficiently targeted with insufficient focus on supply and demand. The range of features outlined in the "What you need to learn" section of the unit specification give an idea of the principles expected. Laws that apply are often not sufficiently covered with only Health and Safety legislation discussed in any detail. A greater range would be expected at level 3.

Learning Outcome 2

This learning outcome follows a similar approach to Learning Outcome 1. There are two elements, one being related to customer focus, again often eliciting only a brief overview. Issues of procurement, logistics and lean manufacturing were often evidenced a little better, although not in the context of supply chain problems.

Learning Outcome 3

This learning outcome focuses on supply chain problems. These were often insufficiently highlighted; consequently most responses were limited (Mark Band 1). Candidates could consider 2nd and 3rd tier suppliers; how buyers, production and sales interact and strategic/operational issues for an organisation.

Conclusions

There is a reasonable standard of work demonstrated, however the generic nature of evidence presented does not sufficiently focus on supply chain principles and closer reference to the unit specification is advisable. A carefully designed assignment brief is critical for this unit, one that guides candidates towards the type of evidence that might allow higher marks to be achieved. They could outline the links between the manufacturer and the supply chain by comparing different companies for example. An investigation of a wider range of appropriate laws would be useful; they should also investigate given supply chain problems and suggest solutions. In addition, a task to consider the 'customer focus' and analyse the supply chain process through a case study might be beneficial.

Unit MP305_1A

Research, Development and the Introduction of New Products in Manufacturing

During this series, the internal marking for this unit was slightly severe with a reasonable standard of work being presented including impressive use of Computer Aided Design and 3D printing techniques.

Learning Outcome 1 (Marking Grid A)

There are three strands to this learning outcome. Although descriptions of the issues and principles that inform the design process proved to be brief, the use of prototyping/testing was well explained although only a brief consideration of legislation was developed, focusing on British Standards. There could have been a consideration of product liability, sale of goods, environmental legislation etc.

Learning Outcome 2 (Marking Grid A)

There are four elements to this learning outcome with candidates expected to carry out market research in order to develop a product design specification and hence develop at least two possible product designs. Use of a questionnaire characterises the first element and there is some analysis noted, although lacking in detail. A useful design brief and some limited market research accompanied this. The product design specification (PDS) was understood and outlined, with some excellent design sketches and CAD designs developed from these sketches.

Learning Outcome 3 (Marking Grid A)

There are three elements to this learning outcome with good evaluation skills demonstrated, involving the customer in the review process and modifying the design in light of customer feedback. The evidence of a refined PDS would be expected following on from this.

Conclusions

The use of a given design brief would allow for the prototyping process and product development evidence to be appropriately targeted. Centres should consider using customer briefs in order that candidates can produce and modify effective designs and product design specifications.

Unit MP306_1A

Principles and Applications of Materials Science in Manufacturing

The evidence presented by candidates adequately met the requirements of the unit specification and marking grid.

Learning Outcome 1 (Marking Grid A)

There are several elements to this learning outcome focusing on chemical, physical, mechanical and biological properties along with the structure of materials. Candidates often provided an overview of a process, introducing elements of how the technology has developed and thus providing some evidence towards Learning Outcome 2. Candidates then went on to describe the properties and structure of products and additional elements, being able to provide a brief description with most progressing to a detailed explanation.

Learning Outcome 2 (Marking Grid A)

This outcome focuses on the use of science and technology in manufacturing, particularly with regards to increasing production. Candidates often discussed the technology, including nanotechnology and biotechnology that is used in the manufacturing process. Often this was discussed with a focus on the use of science and technology to improve the manufacturing process and increase productivity. A range of marks, across all three mark bands, was noted here with more able candidates providing the level of explanation expected of Mark Band 3 candidates.

Learning Outcome 3 (Marking Grid A)

Learning Outcome 3 is split into three sections; the first focus is an investigation of the properties, structures and types of bonding within materials; secondly the production of a secondary material from a primary material and thirdly the health and safety aspects of material testing. Candidates evidenced completion of practical activities and described the processes they used, including the health and safety precautions taken. Comprehensive evidence was presented in the majority of portfolios sampled, with candidates able to present Mark Band 2 and Mark Band 3 levels of description.

Learning Outcome 4 (Marking Grid A)

This outcome requires calculations and interpretation of results. Some good examples were notably evidenced from the data collated and analysed in the practical activities linked to Learning Outcome 3. Although calculations presented were often straightforward, the interpretation and analysis presented allowed many candidates to go beyond Mark Band 1 with some able to provide sufficient detail to allow marks from Mark Band 3 to be accessed.

Conclusions

Where appropriate assessment activities or case studies are used, candidates can develop some very good evidence for this unit. At this level relatively complex tasks are anticipated, in order to allow candidates to access the full range of marks. These tasks should be informed by the unit content and the specific requirements outlined in the marking grid.

Unit MP309_01

Quality in Manufacturing

A variety of approaches are often taken in the assessment of this unit, with company visits, short reports and presentations being used as evidence. The majority of assessment was seen to be somewhat generous for this unit where specific elements are not evidenced sufficiently to allow marks to be awarded.

Learning Outcome 1

This outcome focuses on the importance of quality, including principles of total quality management (TQM) and the implications of poor quality and its affect on profit margins. There are three elements to this learning outcome with many candidates able to provide descriptions of what quality means in manufacturing, sometimes in significant detail. The element requiring the consideration of what poor quality means and its influence on profit margins was not clearly addressed by the majority of candidates, with understanding of the wider issues such as rework, reputation, in process costs etc. not being sufficiently considered. Useful overviews of TQM were noted for the third theme, although the whole business approach is generally understood by most, the philosophy was not extended to techniques for implementation or how TQM can be sustained. A range of marks was noted for this learning outcome with some candidates able to access elements of Mark Band 3.

Learning Outcome 2

This outcome is split into two elements. The first focus requires candidates to consider how standards are implemented and monitored using quality management systems. The expectation is that explanations would focus on how quality standards such as ISO9000 would be introduced and maintained within an organisation. Candidates often discussed quality management systems and standards, giving generally, comprehensive responses. The second element of this learning outcome requires the candidates to review quality control processes in two manufacturing sub-sectors. Awareness of quality control processes was often demonstrated, however two manufacturing sub-sectors are required and these were often not clearly identified. Similarly, there was limited evidence of the evaluation required at Mark Band 3.

Learning Outcome 3

This outcome is split into two elements with the first being a specific requirement for candidates to use appropriate measuring techniques to carry out a quality audit. There is a clear expectation that candidates will carry out a practical activity to address this, instead some used graphs and tables showing quality data they had been given. It would be expected that candidates would process this data analytically, to show how statistical process control (SPC) and control charts could be derived from this. As noted in previous reports candidates often analysed given data in some considerable detail, providing graphical interpretations that allow significant interpretation and

recommendations to be made. Using given data however does not allow candidates to carry out the audit anticipated, this somewhat limits marks available for this learning outcome and consequently there is often some discrepancy with the marks awarded by the assessor and those justified by the evidence provided.

Conclusions

Where assessment briefs are being provided it is clear that candidates are, generally, being given appropriate activities however key elements such as the requirement to demonstrate the use of measurement techniques to carry out a quality audit are not being clearly articulated.

Candidates have demonstrated knowledge and understanding, sometimes in significant detail; however the responses do not accurately reflect the requirements of the unit specification. It would be beneficial if tasks and activities required of candidates were informed by the contents of the marking grid and assignment tasks could directly reference these evidence requirements to aid candidates.

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