

## A LEVEL

*Moderators' report*

# ***DESIGN AND TECHNOLOGY***

**H404**

For first teaching in 2017

**H404/03/04**

**Summer 2019 series**

Version 1

# Contents

Introduction .....	3
General overview .....	4
Common misconceptions .....	10
Helpful resources .....	10
Additional comments .....	10



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## Introduction

Our Moderators' reports are produced to offer constructive feedback on centres' assessment of moderated work, based on what has been observed by our moderation team. These reports include a general commentary of accuracy of internal assessment judgements; identify good practice in relation to evidence collation and presentation and comments on the quality of centre assessment decisions against individual marking criteria. This report also highlights areas where requirements have been misinterpreted and provides guidance to centre assessors on requirements for accessing higher mark bands. Where appropriate, the report will also signpost to other sources of information that centre assessors will find helpful.

OCR completes moderation of centre-assessed work in order to quality assure the internal assessment judgements made by assessors within a centre. Where OCR cannot confirm the centre's marks, we may adjust them in order to align them to the national standard. Any adjustments to centre marks are detailed on the Moderation Adjustments report, which can be downloaded from Interchange when results are issued. Centres should also refer to their individual centre report provided after moderation has been completed. In combination, these centre-specific documents and this overall report should help to support centres' internal assessment practice and preparation for moderation in future series.

## General overview

In the first series of the newly reformed A Level NEA we were delighted to receive and moderate some outstanding examples of iterative design in the development of an engineered product.

Centres should be aware that electronic portfolios are now a mandatory requirement with A3 style paper portfolios no longer being acceptable. The majority of centres either sent work via USB drive or uploaded work and associated forms directly to the repository, both of these work well.

Unencrypted USB drives are very helpful; if there is a need for a password, please choose a short clear password that does not have letters and numbers that can easily be mistaken for each other such as 1 or l, o or 0 for example. Also make sure your moderator received the password, having to chase for this causes unnecessary delays to the moderation process.

PowerPoint is still widely utilised to very good effect, but other methods were also seen. Excessive file sizes can however be a problem. Complex presentations that take a long time to load are counterproductive.

While interactive dialogue is a vital component there is absolutely no requirement for a presentation to have upwards of 15/20 videos embedded. We would not expect a centre to have more than around ten and it can be counterproductive to have numerous videos on a single slide of a presentation. They should always be compressed and tested before sending with the sample.

Many centres provided a separate folder containing 'clearly labelled' videos, enabling most moderators to view all video files. It is preferable however that this facility is used as a backup as viewing videos in context during the PowerPoint presentation is a far more valuable exercise.

Centres should be aware that unless work is required for archiving or awarding purposes then it is our intention to return all work that is sent in at the end of the moderation series.

## NEA Forms and Administration

Centres should be aware that there are only two forms that are required alongside the students work: The Candidate Recording Form (CRF) and the Candidate Declaration Form (CDF).

The CRF is an interactive form that correctly totals candidate marks for each strand thus avoiding clerical errors. This form should **not** be completed in pencil or pen.

The CCS160 (Centre Authentication Form) should **not** be sent in with the sample; it should be signed by all teachers involved and retained within the centre as required by JCQ.

Observations and comments on the Candidate Record Forms can be very helpful, particularly in indicating where levels had been met and criteria reached. However, to save time with administration, we recommend candidates complete a reference document to help both colleagues and external moderators identify the locations of evidence for each marking criterion. In addition we do not expect teachers to spend a huge amount of time writing excessive observations; the points made are to clarify application of marking or instances that are unique to the candidate in question.

Candidates often used headings to manage the design process successfully, with simple explanations of what each page contained as well as lessons learnt/next steps as they moved through the iterative process, this is an extremely useful strategy for them to use.

Marks must be uploaded by May 15th at the latest. Work must be sent/uploaded within three days of receipt of the sample request email. It remains a frustration following up on work/forms not received in the week following this date and slows the moderation process unnecessarily.

## Key Points

The purpose of the moderation process is to make sure that centre assessments are in line with a common national standard. This is achieved by adjusting any centre assessment where the moderation process indicates that this is necessary based on the sample of work viewed. Centres receive a detailed report following moderation which identifies specific areas of the assessment criteria which need attention, where applicable.

In internally assessed units where the assessment contains many sections such as in Design and Technology, erring on the side of generosity in the assessment of some areas can have a significant cumulative effect.

## Strand by strand guidance on H404-03/04, Iterative Design Project requirements

This Iterative Design Project carries 100 marks.

OCR suggests approximately 60 hours for completion of this non-exam assessment. This does not present a limit, but it is important to recognise that if candidates are producing excessive work that becomes irrelevant to the context and brief, or is not concise, then this is counterproductive and ultimately does not add to the experience they have nor is it within the ethos of the specification.

### Strand 1 - Explore

The use of primary users/stakeholders is fundamental within the reformed Design & Technology qualifications. Candidates should continually refer back to and have direct contact with their primary user/stakeholders in their explorations throughout. Use of a peer/member of staff taking on the persona of a user is helpful if a user is not available.

A broad range/contrast when exploring possible contexts offers candidates an opportunity to gain valuable insights and further understanding. Involving users/stakeholders in discussions at this stage can also be very useful.

Investigations that explore existing products are much more useful when products are analysed first-hand – disassembly of a broken or old product can be immensely helpful to the understanding of candidates.

The exploration of materials/components is best employed within the iterative design process and linked/related directly to the ideas/developments that are taking shape. Standalone slides on a list of generic materials/components that bear little relevance to the engineered product chosen are of limited value.

There appeared to be some misunderstanding of the technical specification. In essence this should offer sufficient clarity for commercial/industrial manufacture of the intended design solution to a third party so they are able to make a prototype of it themselves. Despite it being section 1.6 it actually sits just before the making of the final prototype. Working drawings are fundamental to this, as are bought in items, the choice of materials and required manufacturing processes. Many centres missed this crucial element completely.

## **Strand 2 – Create: Design Thinking**

OCR overtly encourages creative and innovative product developments that not only demonstrate a progressive (iterative) design process, but also take into consideration the feedback and requirements of primary users and other stakeholders. It may not always be possible for candidates to work with external people, but working with a member of staff or peer who can offer a realistic persona of the stakeholder is really important to offer sufficient feedback and support to the design process.

There were a significant number of candidates that simply fixated on a single idea and subsequently did not explore other ideas that may well have led to a more creative and educational experience for them. A wide range (these specifications suggest a minimum of 10) and variety of different ideas being presented offers candidates the opportunity to develop their ideas innovatively and with an open mind, in keeping with the iterative philosophy.

Where centres clearly support the iterative design approach, that allows freedom to be creative and with several progressive developments of either a whole idea or a component within, then the outcomes are often excellent, meeting the expectation for MB4 with ease. Some students who embraced iterative philosophies here also demonstrated some exceptional thinking, MB5. Three-dimensional development can be extremely useful.

The use of technical language and understanding is expected when iteratively designing. Simply exploring the use of shapes without any aspirations to understand how the structure behind a given shape is derived or constructed is a missed opportunity at this level. The modelling and on-going testing of the systems that enable operation is an important opportunity to explore design thinking. DFMA and standardising wherever possible can also be utilised throughout Design Engineering.

## **Strand 3 – Create: Design Communication**


Different methods of communication and presentation should be encouraged. There is no expectation that an idea will begin its iterative journey as a sketch, although many candidates find this helpful. The start point is purposely fluid with sketch modelling and CAD being examples of well used techniques utilised as method to deliver a start point.

It is essential that for all evidence to be fully considered through moderation that centres are following the submission guidelines set out in the specification; that file sizes are compacted wherever possible; and all videos and audio files are tested to make sure they are accessible from external devices.


The real time capture of findings and decision making is a crucial element of the NEA and impacts on several key aspects of the marking criteria.

## **Strand 4 – Create: Final Prototype(s)**

It is important that candidates recognise the difference between the design solution they have developed for industrial production and the final prototype(s) they make as the most accurate possible representation of the intended solution to be able to clearly present its quality and functionality to a third party stakeholder.

	<b>Misconception</b>	<p>The Technical Specification focuses on the specific details and information required to commercially manufacture a design solution.</p> <p>The planning that is being assessed in Strand 4, relates to the preparation for making a final prototype of the design solution in a school/college workshop; recognising modifications of scale, materials or processes used to best deliver a final prototype(s) that can be presented and tested.</p>
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If evidencing the use of hand tools, machinery, digital design and digital manufacture throughout the project is limited then centres should be marking in MB1 for 'Use of specialist tools and equipment'. If candidates have not evidenced one method and the rest of their work for criteria 4.4 is strong then marks cannot be given above MB2 for this statement. Digital design and manufacture (CAD/CAM) is a mandatory element of these specifications, so centres are required to make provision for their inclusion within every project.

	<b>AfL</b>	<p>Candidates' demonstration of the use of hand tools, machinery, digital design and digital manufacture is an essential requirement of the qualification.</p> <p>Getting candidates in the habit of recording earlier modelling as well as the making of their final prototype(s) will ensure they have evidence in their portfolio to satisfy this requirement.</p> <p>It is also worth building in a check point to the delivery of a project before candidates' finalise their design solution to make sure all four of these uses will be covered and evidenced.</p>
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There should be sufficient video and photographic evidence of the final prototype(s) to assess or evaluate its quality, viability and/or success. Moderators must be able to view the final prototype with clarity. The quality of photographs particularly of close up work is important.

Moderators should also be able to clearly see evidence to suggest how the product could be viable for the intended commercial/industrial use. Markers making a personal judgement without candidate evidence in support; is not sufficient to assess viability.

## Strand 5 - Evaluation

Designing iteratively requires on-going analysis and evaluation of ideas/solutions, and is fundamental to candidates' success. Centres should endeavour to instil a mind-set of continual refinement toward the most appropriate and advanced solution for the market/industry and opportunity being designed for and within the facilities and resources available.

The views from primary users/stakeholders in real time should be evident and/or evaluations of others opinions in order to inform the next steps/progression of their design process.

Wider issues such as LCA and the impacts of the product more broadly are often overlooked.

Risk assessments had a very broad range of responses. Please do consider health and safety throughout the project. Candidates often overlook this important area within investigations of their context.

Testing and analysis should be rigorous and objective. Evidence of the planning and implementation of this should be clearly presented. User/stakeholder testing when analysing the design solution/final prototype(s) is expected.

Testing should wherever possible be undertaken in the intended environment the design solution would be used in.

Further modifications and any opportunities to improve design optimisation are expected with this strand. Design optimisation was often not covered by candidates, which essentially means that they miss an opportunity to reflect on their work and critically evaluate how they might take it further in terms of optimisations, economies and all related considerations.

## **Final Points**

Candidates do not need to over-enhance the background of design sheets; this is not the best use of their time. The use of Arial 10 point as an absolute minimum should be encouraged for PowerPoint presentations.

Centre and candidate name and number must be on all work that is presented.

Slides/pages need to be numbered to aid navigation for centre and moderation process.

Staff/peers acting in the role of user/stakeholder persona are a useful tactic but this must be clearly articulated and referenced within the portfolio. All work undertaken must be by the candidate.

Acknowledging sources, assistance with a bibliography is a requirement in order to authenticate the work as the students own. Where links are taken from the internet, get candidates in the habit of copying the URL at the point that they source the image/information. This will make referencing a lot easier.

The overall ethos for this specification is based on 'real-time recording' of events as they actually happen. Interactive dialogue involves discussing the selected product; comparative products; iterative development; on-going analysis; evaluation and testing with others and, responding to suggestions made. Evidence of interaction should be recorded in real time with the active comments of those involved recorded first-hand and not retrospectively.

Re-typing of first-hand comments is totally counterproductive and should be avoided.



**Reminder**

OCR A Level Product Development offers three clear endorsed titles:

- Design and Technology: Design Engineering (H404)
- Design and Technology: Fashion and Textiles (H405)
- Design and Technology: Product Design (H406)

It is absolutely imperative that centres fully appreciate and carefully choose the route that best suits the needs and aspirations of their candidates.

The brief commentary below is a reminder of the basic premise of each. Products from H406 cannot be entered for H404 for example. The need for a focused development of a product is at the very core of this NEA and as such areas such as buildings and architectural models do not offer the same scope to successfully fulfil the criteria of the endorsed routes.

Design Engineering (H404) focuses engineered and electronic products and systems in respect of:

- Function, operation, components and materials
- The selection and uses of the above in commercially viable products and/or systems.

Fashion and Textiles (H405) focuses on a range of different fashion and textiles products, along with their applications and analysis, in respect of:

- Materials, components, process and trends, and their selection and use
- The selection and use of the above in industrial and commercially viable products and practices.

Product Design (H406) focuses on consumer products and applications, and their analysis in respect of:

- Materials, components, process and their selection and uses in products and/or systems
- The selection and use of the above in industrial and commercially viable products and practices.

## Common misconceptions

- More content is not always better and there is no requirement to have 20 embedded videos in a single PowerPoint presentation. We would not normally expect to see more than 10.
- The CCS160 (Centre Authentication Form) should not be sent to OCR, but instead should be signed by all teachers involved and retained within the centre for later inspection, if required.

## Helpful resources

If centres would like more guidance on fulfilling the Product Development Requirements, Chapter 10 - NEA Product Development of the OCR A/AS Level Design & Technology text book is particularly informative and is extremely detailed. It has been compiled with numerous examples to aid delivery of the NEA.

It is strongly recommended that centres visit <http://www.cpdhub.ocr.org.uk> or call the Customer Contact Centre in order to take advantage of the support that can be offered in making informed choices or marking this component.

## Additional comments

It is very helpful to the moderation process if centres upload, or send, required samples within 3 days of receiving the email request. It is very time consuming and slows the moderation process if moderators have to chase centres for missing samples.

## Supporting you

For further details of this qualification please visit the subject webpage.

### Review of results

If any of your students' results are not as expected, you may wish to consider one of our review of results services. For full information about the options available visit the [OCR website](#). If university places are at stake you may wish to consider priority service 2 reviews of marking which have an earlier deadline to ensure your reviews are processed in time for university applications.



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Please get in touch if you want to discuss the accessibility of resources we offer to support delivery of our qualifications: [resources.feedback@ocr.org.uk](mailto:resources.feedback@ocr.org.uk)

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### General qualifications

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