

A LEVEL

Moderators' report

DESIGN AND TECHNOLOGY: PRODUCT DESIGN

H406

For first teaching in 2017

H406/03/04 Summer 2022 series

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Introduction

Our moderator' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

Advance Information for Summer 2022 assessments

To support student revision, advance information was published about the focus of exams for Summer 2022 assessments. Advance information was available for most GCSE, AS and A Level subjects, Core Maths, FSMQ, and Cambridge Nationals Information Technologies. You can find more information on our [website](#).

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General Comments

In the first series since the disruptions of Covid19 of the recently reformed A Level NEA we were delighted to receive and moderate some outstanding examples of iterative design in the development of a product, within the Product Design endorsed specification.

A gentle reminder to centres 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 with PowerPoint utilised to very good effect.

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.

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 ten and there is no requirement to have numerous videos on a single slide of a presentation. **They should always be compressed.**

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.

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 is a far more valuable exercise. Where videos are unable to be embedded within a portfolio, it would be helpful for them to be directly hyperlinked to the source. A number of centres made effective use of YouTube as a platform to privately host candidates' video and audio evidence.

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 at the end of the moderation series.

Please do not upload individual videos to the repository

NEA Forms and Administration

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

The CDF must be signed by the respective **candidate and teacher**.

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. Colleagues are urged to use the **digital** form, where possible. This would save time resolving clerical errors that would impact the time for the moderation process.

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 Form (**CRF**) can be very helpful, particularly in indicating where levels had been met and criteria reached.

Management of Portfolio by candidates

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. The support of colleagues within centres is greatly appreciated in keeping to these timescales.

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 these ones, erring on the side of generosity in the assessment of some areas can have a significant cumulative effect.

Misconception – Iterative Design v Linear approach



Some centres are still using the mark scheme to create the slide titles and therefore seemingly being hefted to a linear approach akin to the traditional style of research, design specification, design, develop, prototype and evaluate.

The philosophy at the very heart of this specification is that of iterative design. For example, while undertaking design ideas, candidates are encouraged to further explore by discussing concepts with their user/stakeholder or investigating materials/components or mechanisms to further their design and knowledge. Explore, create, and evaluate is cyclical. Evidence is often apparent throughout a candidate's portfolio and Criteria 1.6 for instance, would not be expected to appear until after the final design solution is finalised.

Strand by strand guidance on H404/5/6 03/04 Product Development requirements

This is not an exhaustive list, and these comments relate directly to the A Level Specification which can be found on the OCR website. Chapter 10 NEA Product Development of the OCR A/AS Level Design & Technology textbook is particularly informative and is extremely detailed.

We urge you to use this resource, it has been compiled with numerous examples to aid delivery of the NEA.

This Product Development carries 100 marks.

Strand 1 – Explore

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.

The use of primary users/stakeholders is **fundamental** within these endorsed titles. Candidates should continually refer back to and have **direct** contact with their primary user/stakeholders in their explorations throughout. Use of a peer taking on the persona of a user is helpful if a user is not available. These interactions should be clearly evidenced within a candidate's portfolio.

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 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 that bear little relevance to the product chosen are of limited value.

Misconception – Technical Specification



There appeared to be some misunderstanding of the technical specification. This should offer sufficient clarity for 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 sits just before manufacture. Working drawings are fundamental to this, as are bought in items and the choice of materials.

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 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 exceptional, meeting the expectation for MB5 with ease. 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.

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 that are utilised as 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.

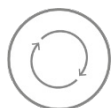
The **real time** capture of findings and decision making is a crucial element of the NEA and impacts on several key aspects of the marking criteria.

Strand 4 – Create: Final Prototype(s)

Note: adaptation for June 2022 series with 4.1, 4.3 and 4.4 relevant.

For future series please revert to the following:

Misconception – Planning for making



Planning should occur before the making process begins and cover all requirements and safety considerations identified from the technical specification. It should be relevant to making in a centre workshop. Timescales for the various processes are a helpful addition.

If evidencing the use of hand tools, machinery, digital design and/or digital manufacture throughout the project is limited then centres should be marking in MB1 for 'Use of specialist tools and equipment'. If they have not evidenced one method and the rest of their work is strong, then marks cannot be given above MB2 for this statement. CAD/CAM is a **mandatory** element of these specifications. It is also important to note that in order to achieve MB4 and beyond for Criteria 4.3 and 4.4 candidates should demonstrate effective and appropriate use.

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 market.

Strand 5 – Evaluation

Designing iteratively requires that ongoing analysis and evaluation of ideas/solutions is fundamental to candidate's success. Centres should try to instil a mind-set of **continual** refinement toward the most appropriate and advanced solution for the market 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 the 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 the actual use of their product.

Testing and analysis should be rigorous and objective. Evidence of the planning and implementation of this should be clearly presented. User/stakeholder testing should always be encouraged with feedback in **real time** wherever possible. Testing should wherever possible be undertaken in the intended environment for use.

Testing against technical and non-technical requirements is also very useful in identifying strengths and weaknesses. With the latter affording a direction for future modifications.

Further modifications and any opportunities to improve design optimisation are expected within this strand.

Final Points

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

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

Staff/peers acting in the role of user/stakeholder persona is 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 very helpful.

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/ongoing 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 counterproductive and should be avoided.

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.

It is strongly recommended that centres visit 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.

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