OCR
Oxford Cambridge and RSA

GCSE (9-1)

Moderators' report

DESIGN AND TECHNOLOGY

J310

For first teaching in 2017

J310/02/03 Summer 2023 series

Contents

Introduction

Our moderators' 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.

Online courses

We have created online courses to build your confidence in delivering, marking and administering internal assessment for our qualifications. Courses are available for Cambridge Nationals, GCSE, A Level and Cambridge Technicals (2016).

Cambridge Nationals

All teachers delivering our redeveloped Cambridge Nationals suite from September 2022 are asked to complete the Essentials for the NEA course, which describes how to guide and support your students. You'll receive a certificate which you should retain.

Following this you can also complete a subject-specific Focus on Internal Assessment course for your individual Cambridge Nationals qualification, covering marking and delivery.

GCSE, A Level and Cambridge Technicals (2016)

We recommend all teachers complete the introductory module Building your Confidence in Internal Assessment, which covers key internal assessment and standardisation principles.

Following this you will find a subject-specific course for your individual qualification, covering marking criteria with examples and commentary, along with interactive marking practice.

Accessing our online courses

You can access all our online courses from our teacher support website Teach Cambridge.

You will find links relevant to your subject under Assessment, NEA/Coursework and then Online Courses from the left hand menu on your Subject page.

If you have any queries, please contact our Customer Support Centre on 01223 553998 or email support@ocr.org.uk.

Would you prefer a Word version?

Did you know that you can save this PDF as a Word file using Acrobat Professional?

Simply click on **File > Export to** and select **Microsoft Word**

(If you have opened this PDF in your browser you will need to save it first. Simply right click anywhere on the page and select **Save as . . .** to save the PDF. Then open the PDF in Acrobat Professional.)

If you do not have access to Acrobat Professional there are a number of **free** applications available that will also convert PDF to Word (search for PDF to Word converter).

General overview

General comments

This was the third series of the newly reformed GCSE 9-1 Design & Technology Iterative Design Challenge. We were pleased, once again, to receive and moderate a broad range of interesting folders that covered all material areas.

We saw a range of Iterative Design projects that responded to all three of the contexts published by OCR last June with 'Pet Care' clearly being the most popular choices with candidates.

The majority of projects focused on Product Design outcomes in timber, polymers and metals with higher ability candidates combining them as necessary. There were fewer entries that focused on textiles and design engineering solutions and very limited responses that focused on papers and boards.

Candidates identified a wide variety of suitable opportunities for innovative and creative outcomes. As in previous years, those candidates who maintained regular contact with appropriate people willing to act as stakeholders (whether for real or 'in persona') were able to maintain the regular cycle of build, test and repeat that is crucial to success at this level.

It was clear to see where successful centres had made good use of the guidance and exemplar folders provided by OCR at training events to structure their folders and mark them correctly against the benchmarks.

On the whole, the moderating team felt that both the overall quality of portfolios and the accuracy of marking had improved this year.

Forms and Administration

The vast majority of centres now submit work digitally using PowerPoint or PDF presentations, with even more centres using the repository system this year. Excessive file sizes remain an issue with several centres having to resort to postal submissions via USB when their files were too big for the repository upload limit of 600mb.

Reducing file sizes in PowerPoint
If the file size of your presentation is too large, try the following tips to make it more manageable. • compress the pictures • compress the video • depending on which version of PowerPoint your centre is using there are several 'How To' videos on YouTube that can help. Guidance for reducing the file size of a PowerPoint • if using a phone to record video, candidates should be encouraged to download **video compression apps** to reduce the file size before inserting them into their presentations'.

Many centres coped well with the return to the regular Candidate Record Forms (CRFs). The advice from training remains that centres should add comments to support the marking in the observation column only if the candidate has not made it clear in their folder. Several centres are still adding generic mark scheme based comments to this section which does not help the moderating process. The location of evidence is the most useful aspect of these forms and we recommend that this is passed on to candidates using the resource that has been created to support this on the OCR website. Very few candidates included this slide/page at the start of their folders again this year and it is recommended that

centres allow sufficient time at the end of the project for this important administration task before marking.

There was a noticeable reduction in clerical errors this years as the majority of centres used the electronic version of the CRF form.

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 such as this one, where the assessment contains many sections, erring on the side of generosity in the assessment of several areas can have a significant cumulative effect.

It is important to recognise if candidates are producing excessive work that becomes irrelevant. If the portfolio is not concise, this can impact on areas of assessment that relate to the relevant and concise nature of the portfolios. A high quality portfolio is perfectly achievable in less than 30 slides (the recommendation is around 25 slides).

OCR support

ⓘ Familiarise yourself with the 'Internal Marking Guidance' to make sure you are clear on the requirements of each Marking Criteria.

Internal Marking Guidance

There is a free online training resource to support the moderation processes for internally assessed qualifications including Design & Technology.

Online Training at Teach Cambridge

Strand by strand guidance on J310/02, 03 requirements

This is not an exhaustive list and these comments relate directly to the [GCSE Specification](#).

Chapter 11: NEA Iterative Design Challenge of the OCR Design & Technology textbook is also particularly informative and is extremely detailed.

Strand 1 – Explore

On the whole, this strand was once again marked accurately by the majority of centres.

To attain high marks in this section candidates are required to **fully** consider the user, stakeholders and the context *throughout* their project. The chosen brief must be **relevant** to the context and suitably **challenging**. **Comprehensive** and **relevant** investigations must be carried out *throughout* the project as they will lead to a **clearly defined** set of user/stakeholder requirements. A highly **accurate** technical specification must be produced that communicates all technical requirements to make the final design commercially, such as **dimensions, manufacturing methods** and **materials**, to a third party.

Candidates who did well generally did the following:	Candidates who did less well generally did the following:
- used a variety of different methods to examine the contexts - set themselves an open/clear design brief that was genuinely challenging - justified their choice of design brief - used considerable amounts of 'hands-on' investigation throughout their folder - fully justified their 'master list' of requirements - presented a detailed technical specification in the form of clear working drawings.	- tended to select an uninspiring brief that would lead to a narrow range of outcomes - investigated materials far too early in the project before ideas had even been explored - included too much generic information - predominantly 'desk bound' investigation relying mainly on the internet - fixated on a solution from the start by focusing on product rather than a problem - used the heading/term 'Specification' instead of 'Requirements' - presented their technical specification as another written list instead of dimensioned views.

Misconception

? The Technical Specification replaces manufacturing/production specifications from legacy specifications and should be developed with consideration of the final design being manufactured commercially rather than in the centre workshop. A series of appropriately dimensioned views is expected as part of this.

Assessment for learning

Encourage candidates to clearly highlight any instances of extra investigation during their development. This could be via coloured boxes or headings such as 'Extra Investigation' 'More Existing Products Research' or 'Technical Info' etc.

Strand 2 – Create: Design Thinking

The marking of this strand was once again marked generously by a number of centres.

To attain high marks in this section, candidates are required to demonstrate high levels of design thinking with **clearly progressive** iterations when developing solutions. They must demonstrate **different** approaches to design that **avoid** fixation. There must be **systematic** evidence of responding to **problems** and **requirements** and **clear** evidence of **innovation** throughout the design process.

Candidates who did well generally did the following:	Candidates who did less well generally did the following:
• used a variety of approaches to generate initial ideas: Sketching, sketch modelling and collaboration • used modelling to actively explore and develop ideas • adopted clearly defined strategies to aid and structure development • clearly identified problems with developments and used headings to make sure appropriate solutions could be effectively 'traced back'.	• fixated on a particular idea at the start and use development to just explain it in more detail • adopted a random approach to development that did not target identified problems • identified few genuine problems - a tendency to believe their idea was suitable from the start.

Assessment for learning
Encourage candidates to describe specific problems with their design and to compare and contrast a range of potential solutions.

Strand 3 – Create: Design Communication

On the whole, this strand was marked quite accurately by the majority of centres this year.

To attain high marks in this strand, candidates are required to demonstrate excellent quality of chronological progression in their development. It must be clear and obvious **how** their design is developing. A range of **different** approaches that can **effectively** communicate will need to be used that demonstrate **high levels** of skill in both the generation of **initial ideas** and **development**. This will need to be shown both **graphically** and via effective **modelling**. A key requirement at the end of development is a **formal presentation** of a final design that will provide impact and clarity to stakeholders.

Candidates who did well generally did the following:	Candidates who did less well generally did the following:
• used a range of appropriate techniques to communicate their design thinking • recorded their development in real time as and when it happened • presented their work using clear headings and subheadings that reflected the terms used in the mark scheme • used CAD to effectively develop specific parts of their design • modelled aspects of their ideas not just full ideas • formally presented their Final Design as if it were a single page presentation to stakeholders.	• showed no clear path or direction to their development • demonstrated low level sketching, predominantly 2D • had a tendency to use a single modelling material • did not explain how their models were helping their development • tended to focus on a single model per idea rather than modelling different aspects • final Design often appeared out of nowhere - making it difficult to trace its evolution back through the folder • final design presented more as a conclusion to their development rather than a presentation that would provide impact to their stakeholders.

Assessment for learning
CAD can be used to effectively develop ideas as well as be used to create the final design presentation.

Strand 4 – Create: Final Prototype

Centres' assessments in this section tended to be lenient when compared with the nationally agreed standard. Several centres over rewarded the use of a narrow range/inappropriate tools and machinery and sometimes did not take into account a lack of digital design and manufacture - a key requirement of this strand.

To attain high marks in this strand, candidates are required to have a **comprehensive** plan of how they would make their final prototype(s) in the centres' workshops. Candidates were also required to show **clear evidence** of them using the tools, techniques and machinery they required.

It is not acceptable for the teacher to assume the potential marketability of the product. Evidence that the candidate has considered the **viability** of their final prototype(s) is a crucial component in the final statement.

Candidates who did well generally did the following:	Candidates who did less well generally did the following:
• had an organised, detailed and clear plan of making that reflected a centre workshop approach • clearly documented their use of tools, techniques, machinery, digital design and manufacture • created a high-quality final prototype that would present well to stakeholders • discussed the differences between their prototype and their intended design in the technical specification • considered and documented the exploration and justification of their prototype's marketability.	• often wrote their 'plans of making' retrospectively • used general statements for whole components, e.g., 'Make the steering wheel' • produced low quality prototypes that would not present well to stakeholders • used inappropriate tools and machinery • did not include evidence of digital design and manufacture • some grades for the viability of the prototype were based on little to no evidence.

Assessment for learning
Encourage candidates to record the making of their earlier models and prototypes to make sure that use of hand tools, machinery, digital design and digital manufacture are covered as frequently as possible.

Strand 5 – Evaluation

Centres' assessments in this section tended to be lenient when compared with the nationally agreed standard.

To attain high marks in this strand, candidates are required to demonstrate excellent levels of analysis and evaluation **throughout** their folder that is both **critical** and **reflective**. This will include information from stakeholders, existing products and wider issues. It must be clear how this information **supports** and **informs** the design process. Ongoing evaluation must demonstrate clearly how the development is **meeting** the requirements and informing the **next steps** for future iterations. **Fully appropriate** methods of testing must be used to test whether the **design solution** is fit for purpose and then followed by a **full evaluation** of the final prototype(s) strengths and weaknesses. Comprehensive suggestions for modification must also consider **design optimisation**.

Candidates who did well generally did the following:	Candidates who did less well generally did the following:
- made it exceptionally clear where analysis was taking place throughout their folder - evaluated at every opportunity, drawing conclusions regularly - applied methodical systems for ongoing evaluation at regular intervals in their development - made excellent use of appropriate users/stakeholders during testing - explored meaningful modifications at the end - were very open to criticism of their ideas.	- did not engage in regular user/stakeholder feedback - tended to use friends/classmates to obtain generic feedback - used simple checklist to check progress - tended to rush testing and evaluation - showed a reluctance to highlight any faults in their prototype - focused on low level modifications such as 'make it smaller' 'round the edges', etc.

Helpful resources

OCR support – Internal marking guidance
i   Internal marking guidance provides comprehensive reference when marking and preparing for the NEA.

OCR support – Candidate exemplars
i   Candidate Exemplar responses from the 2019 examination series illustrate how the mark scheme has been applied, but they should not be seen as the only way to answer questions. Candidate Exemplars on Teach Cambridge

OCR support – Main guidance security
i   There is a guide, which offers an approach to an iterative design challenge within a security context. It was produced by the principal moderator as the qualification was being developed to help highlight the iterative approach now required for the NEA. Portfolio Guidance on Teach Cambridge

OCR support – Identifying evidence in your NEA
i   There are documents to support candidates in identifying the location of evidence for assessment of their NEA. Identifying Evidence on Teach Cambridge

OCR support – Terminology guide
i   There is a guide, which will offer definitions of terminology that bring Design and Technology thinking up to date with the current specifications. Terminology Guide on Teach Cambridge

OCR support – NEA marking criteria
i   There is a document that reflect the criteria for NEA marking. NEA Marking Criteria

Avoiding potential malpractice

Acknowledging sources of information is a requirement of the qualification and should be acknowledged when candidates sign the Declaration. Referencing can be done on a per page basis or with a bibliography at the end. Getting candidates in the habit of copying URLs as they find images or information on the internet for instance and pasting them under the relevant image/information will make referencing more manageable.

Additional comments

Key influences on marks in all categories depend on the level of thinking, complexity, sophistication and difficulty involved. The level of innovation, creativity and the depth of approach and the appropriateness of the skills involved is also an important factor.

Candidates should think about the structure of their folders in advance in order to make sure the presentation offers clear communication and pages are not wasted with large fonts and fewer images.

- Project management and organisation are key skills.
- Centre and candidate name and number must be on all work that is presented.
- Slides need to be numbered to aid navigation for centre and moderation process.
- Try to keep portfolio sizes down to under 30 slides.
- The overall ethos for this specification is based on 'real time recording' of events as they actually happen.
- Using staff and/or peers acting in the role of user/stakeholder in persona is a useful tactic but this must be clearly articulated and referenced within the portfolio.

All work undertaken must be by the candidate.

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Teach Cambridge

Make sure you visit our secure website **Teach Cambridge** to find the full range of resources and support for the subjects you teach. This includes secure materials such as set assignments and exemplars, online and on-demand training.

Don't have access? If your school or college teaches any OCR qualifications, please contact your exams officer. You can forward them this link to help get you started.

Reviews of marking

If any of your students' results are not as expected, you may wish to consider one of our post-results services. For full information about the options available visit the OCR website.

Access to Scripts

For the June 2023 series, Exams Officers will be able to download copies of your candidates' completed papers or 'scripts' for all of our General Qualifications including Entry Level, GCSE and AS/A Level. Your centre can use these scripts to decide whether to request a review of marking and to support teaching and learning.

Our free, on-demand service, Access to Scripts is available via our single sign-on service, My Cambridge. Step-by-step instructions are on our website.

Keep up-to-date

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Please find details for all our courses for your subject on **Teach Cambridge**. You'll also find links to our online courses on NEA marking and support.

Signed up for ExamBuilder?

ExamBuilder is the question builder platform for a range of our GCSE, A Level, Cambridge Nationals and Cambridge Technicals qualifications. Find out more.

ExamBuilder is **free for all OCR centres** with an Interchange account and gives you unlimited users per centre. We need an Interchange username to validate the identity of your centre's first user account for ExamBuilder.

If you do not have an Interchange account please contact your centre administrator (usually the Exams Officer) to request a username, or nominate an existing Interchange user in your department.

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Review students' exam performance with our free online results analysis tool. It is available for all GCSEs, AS and A Levels and Cambridge Nationals.

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