

GCSE (9-1)

Moderators' report

DESIGN AND TECHNOLOGY

J310

For first teaching in 2017

J310/02/03 Summer 2022 series

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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.

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 overview/Introduction

General comments

This was the second series of the newly reformed GCSE 9-1 Design & Technology Iterative Design Challenge following the impact of a challenging two years of COVID-19 lockdowns, restrictions and teacher/centre assessed grades in the interim. 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 "Home Exercise" and "Eating Outside" clearly being the most popular choices with candidates.

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

Candidates identified a wide variety of suitable opportunities for innovative and creative outcomes. Despite the difficulties of securing face to face contact, 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 good centres had made successful use of the guidance and exemplar folders provided by OCR at training events to structure their folders and mark them correctly against the benchmarks.

Higher ability candidates continued to use clear headings to manage the design process smoothly, accompanied by brief descriptions of what each page focused on as well as their 'next steps' in the iterative process.

Forms and Administration

The vast majority of centres now submit work digitally using PowerPoint or PDF presentations, with a marked increase in 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

[Link to Microsoft support – how to reduce the file size of your PowerPoint presentations](#)

- depending on which version of PowerPoint your centre is using there are several 'How To' videos on YouTube that can help
- 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.

The majority of centres coped well with the revised 2022 Candidate Record Forms (CRFs) with only a handful accidentally using the 2019 version. The advice from training remains that centres should only add comments to support the marking in the observation column if the candidate has not made it clear in their folder. A worrying number of centres are still adding generic mark scheme-based comments to this section. This is both time consuming and unproductive for centres. The location of evidence is the most useful aspect of these forms and to aid teachers, 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 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 marked increase in missing forms and clerical errors that required extra work from moderators this year.

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.

Some centres approached the challenge from a range of specific material areas/teacher specialisms. Where this occurs, it is essential that they internally moderate across all candidates' portfolios to arrive at a consensus.

In response to the effects of the pandemic, OCR reduced the requirements in Strand 4 and suggested approximately 25 hours for completion of this non-exam assessment this year. It is important to recognise if candidates are producing excessive work that becomes irrelevant and if the folder is not concise this can impact on areas of assessment that relate to the relevant and concise nature of the portfolios. A high-quality folder is perfectly achievable in less than 30 slides.

OCR support



Familiarise yourself with the '[Internal Marking Guidance](#)' provided on the subject web page to make sure you are clear on the requirements of each Marking Criteria.

A new free online training resource has been developed to support the moderation processes for internally assessed qualifications including Design & Technology. <https://train.ocr.org.uk>

Strand by strand guidance on J310/02, 03 requirements

This is not an exhaustive list, and these comments relate directly to the GCSE Specification which can be found on the OCR website. 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 marked accurately by 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:
<ul style="list-style-type: none"> used a variety of different methods to examine each context to identify possible problems 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. 	<ul style="list-style-type: none"> tended to select an uninspiring brief with a narrow range of outcomes investigated materials too early in the project before ideas had even been explored included too much generic information predominantly 'desk bound' relying on second-hand/internet-based investigation fixated at the start of the project - focused on product instead of a problem e.g., "folding table" technical specification presented as another list of requirements (legacy thinking).

Misconception



The technical specification replaces manufacturing/production specifications from the 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.

AfL



Encourage candidates to clearly highlight any instances of additional investigation during their development. This could be via coloured boxes or headings such as "additional investigation" "more existing products research" "Technical info" etc.

Strand 2 – Create: Design Thinking

The marking of this strand was often too high from 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:
<ul style="list-style-type: none"> 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' checked their final design against their requirements before moving on to the technical specification. 	<ul style="list-style-type: none"> fixate 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 few genuine problems identified - a tendency to believe their idea was virtually perfect from the start focusing on how models were made rather than what they were learning from them. did not engage with regular user/stakeholder feedback.

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Encourage students to highlight any new requirements they have decided on during their development. These can then be added to their master list of requirements with a page reference.


Strand 3 – Create: Design Communication

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 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:
<ul style="list-style-type: none"> • used a range of appropriate techniques to communicate their design thinking • recorded their development in real time as and when it happened • documented the process clearly - effectively "telling the story" of their project • presented their work using clear headings and subheadings that reflected the terms used in the mark scheme • used CAD effectively • modelled aspects of their ideas not just full ideas • took pride in the clarity and presentation of their folder • formally presented their Final Design as if it were a single page presentation to stakeholders. 	<ul style="list-style-type: none"> • no clear path or direction to their development • low level sketching, predominantly 2D • a tendency to use a single or narrow range of modelling materials • 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 - difficult to trace its evolution back through the folder • final design presented more as a conclusion to their development rather than in a form suitable to present to stakeholders.

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Make sure candidates have learned a broad range of suitable modelling skills to avoid fixating on a particular method or material. Encourage them to adopt different modelling strategies dependent on how they intend to test and/or receive feedback.

Strand 4 – Create: Final Prototype

The assessment of this strand was significantly altered this year. The changes were designed to reduce the pressure on teachers and candidates in the 2021/22 academic year, and to safeguard against ongoing public health concerns.

Candidates were **not required** to make a final prototype and were allowed to **demonstrate** their knowledge and use of the tools, techniques and machinery they **would have** used.

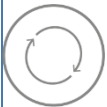
Centres' assessments in this section tended to be slightly lenient when compared with the nationally agreed standard.

To attain high marks in this strand candidates were required to have a **comprehensive** plan of how they **intended** to make their final prototype(s) in the centres' workshops. Along with clear evidence that could demonstrate they knew **how** to use the tools, techniques and machinery they were planning on using.

There was a significant array of approaches to this. The majority of centres proceeded as usual and made a prototype unencumbered by the need for a high-quality end result thus allowing the candidate to document their use of the tools, techniques and machinery they used. Other centres focused on making smaller aspects of the final design to help demonstrate their candidates use of tools, machinery and digital design and manufacture. Some centres allowed candidates to use images of their practical skills from earlier projects along with written explanations.

Candidates who did well generally did the following:	Candidates who did less well generally did the following:
<ul style="list-style-type: none"> organised their plan to reflect the requirements of the technical specification had a detailed and clear plan of making that reflected a centre workshop approach the clearly knew how it would be made tried to make their final design/prototype documented/highlighted their use of tools, techniques, machinery, digital design and manufacture during their development (modelling). 	<ul style="list-style-type: none"> wrote their plans of making retrospectively demonstrated unrelated practical skills, for example: demonstrating a dowel joint in a paper/board project used general statements of making for whole components e.g., "Make drawer" received a teacher inferred grade based on little to no evidence.

AfL



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

This strand was slightly altered this year. Candidates were assessed on their ability to test the feasibility of their **design solution** as no final prototype was required.

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 can still be used to test whether the **design solution** is fit for purpose and then followed by a **full evaluation** of the **design solutions** 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:
<ul style="list-style-type: none"> • made it 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 • open to criticism of their ideas. 	<ul style="list-style-type: none"> • tended to use friends/classmates to obtain generic feedback of shallow depth • did not analyse feedback • used simple tick lists to check progress • tended to rush testing and evaluation • a reluctance to admit any faults of their design solution • focused on low level modifications such as “make it smaller” “round the edges” etc.

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.

Helpful resources

Internal marking guidance

[This internal marking guide](#) provides comprehensive reference when marking and preparing for the NEA.

[This online training resource](#) has been developed to support the moderation processes for internally assessed qualifications including Design & Technology.

Candidate Exemplars

[These exemplar responses](#) were chosen from the summer 2019 examination series. They should not be seen as the only way to answer questions, but they do illustrate how the mark scheme has been applied.

Main guidance - Security

[This guide](#) offers an approach to an iterative design challenge for a security context.

Identifying evidence in your NEA

[These documents](#) are to support candidates in identifying the location of evidence for assessment of their NEA.

Terminology guide

[This guide](#) will offer definitions of terminology that bring Design and Technology thinking up to date with the 2017 specifications

NEA marking criteria

[This marking criteria](#) guide outlines how learners are to be assessed following completion of their own iterative design process.

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.

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.

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

The overall ethos for this specification is based on 'real time recording' of events as they actually happen.

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