Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

Summer 2024

Pearson Edexcel GCE
In Design & Technology: Product Design
9DT0/02

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2024
Publications Code 9DT0_02_2406_ER

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

Principle Moderators report 9DT02
2024.

Introduction and general comments:
The submissions for this series showed a slight upturn in terms of the standard on the 2023 submission. The entry remains reasonably stable which is encouraging. In terms of the type of submission, the more Resistant Materials based work is still the most popular, but we did see a small increase in the number of architectural models. The textiles and electronic submissions remain small. Post pandemic we are seeing a return to completed prototypes and the frequency of concept models is diminished.
The candidates should conduct relevant investigations to identify and establish the needs and then use the client throughout the whole process culminating in the manufacture of an artefact that evidences the candidate's ability in terms of the skilled use of a range of processes appropriate to the highest levels of the assessment criteria. The product manufacture must be evidenced by photography that illustrates the candidates manufacturing skills. This photography must be 'honest' showing all aspects of the final product. The client led activity is still somewhat lacking and this needs to be addressed if the centres are to access the highest levels of the assessment criteria.
It is important at this stage to say that this approach is different from the more linear legacy specification, iterative evidence should be seen throughout the portfolio and will be credited in the relevant assessment criterion. It seems that the centres are searching for a formulaic approach to the portfolio often in a linear manner. This is not in the spirit of this qualification or indeed fulfilling the requirements of the assessment criteria. We are looking for the creative and innovative approach to the portfolio.
It should be noted that the centres are now required to submit the work electronically on the DLWT portal along with an authentication sheet, the electronic CAB and further photography evidencing the product manufacture. The specification guidance is still however relevant 30 to 40 slides/sheets of A3. We saw several examples of 100 plus slides and in some cases, candidates submitting numerous other files, often repetitive, candidates must be selective in the submission of evidence.

Administration (Centres)
In general, the administration of the submission is improved, the centres seem to be getting to grips with the requirements of the LWA portal and in most cases, we saw the correct documentation for all candidates. It would assist the moderation process if all the centre authentication documents are submitted as on in the admin bar, which a number of centres did.
We still had to send several E 6 forms to centres highlighting administration issues often it was due to some incorrect transcription where the marks on the CAB and entered into Gateway differed. There were some centres who failed to submit photographic evidence and used the incorrect file naming protocols, it is pleasing to report that these errors were greatly diminished on previous submissions.

Part 1: Identifying and outlining possibilities for design.

Grid 1: Identification and investigation of a design possibility.
In this section we are looking for the candidates to identify design possibilities and explore them. This will then allow them to fine tune their thinking and come up with an initial statement of intent. This section should have a commercial approach and is therefore most successful when the candidate has a meaningful narrative with a client or realistic stakeholders.
We are expecting to see the candidates exploring design possibilities along with a real client, for example, the candidate may explore the needs of a local community alongside a town councilor with reference to the local plan. This may give the opportunity to explore leisure

facilities and building plans and indeed other amenities. This may be ‘honed’ to themed benches reflecting the area or other distinctive street furniture. Thus, would also give opportunities to develop the interested stakeholder narrative as the views of residents could be gathered.
Or candidates that focused on the home could explore the needs of clients in terms of hobbies, interests and day-to-day living in the house and garden and these can be ‘teased’ into a preliminary brief.
All too often we saw a significant percentage of candidates moving straight to a solution based upon a short client ‘interview’ e.g. ‘My client works from home and needs a desk’. Or many candidates spent too long investigating several areas in great detail, before focusing upon a single context, often rendering pages of work irrelevant as the contexts were so disparate.
It was rare to see candidates approaching this task with a genuinely open mind and the candidates often had a scenario/outcome in mind. To access the highest levels of the assessment criteria the candidates need to embrace a more overt client designer relationship.
In most cases the candidates achieved marks towards the top of the middle box, but they did not have an understanding of the iterative design process, this is a pity as the lack of real client narrative does impact on the candidate performance across the rest of the assessment criteria.
Centres need to encourage the candidates to develop a commercial approach and have a client narrative that moves the research forward and ensures that it has some focus.
The centre assessment in this criterion was lenient across the submission and it is important that this is recognised as it can impact candidate performance across the rest of their submission.

Grid 2: Investigation of needs and research

The centre assessment in this criterion was lenient as reported by the moderation team. It is imperative that the candidates avoid generic research, the work must have an emphasis on the design possibility and ensure that we see real linkage between the design needs and the research. The client input is imperative such that the research remains focussed, in the best cases we should see a real conversation that is ongoing with clients or stakeholders that ensures that the research remains focussed and does not become generic or textbook in style.
The candidates should try to incorporate research that involves stakeholders which gives real depth to the research therefore ensuring that the need identified is sound and the research therefore remains fixed on the design possibility.
It is unfortunate to report that we still a lot of unfocused, formulaic, generic and suspected centre led research. Where a centre had structured the research, this tended to disadvantage stronger student, in some cases it felt like the centre had instructed the candidates to ‘do a page on materials!’ It is important that the portfolio is structured by client narrative and a strong client designer relationship.
Centre structured submissions led to investigations and research sections which were rather generic and struggled to support design development later in the project Although some candidates had missed opportunities to carry out important, pivotal research, such as the dimensions and/or quantities of items to be stored, a greater proportion did, at least, attempt to acquire some of this information.
In the best cases the client was consulted, and this then moved the research on in a meaningful and indeed iterative manner.

Grid 3: Specification
This section should be characterised by a fully re-worked design brief that reflects the client's needs and is a product of the investigations that have been undertaken. It should reflect the changes that have been made to the candidates initial thinking, this again evidences the iterative/commercial approach to the design work, and also reflects the dialogue undertaken with the client. The specification should then be realistic, technical and measurable.
Candidates should ensure that as a result of investigation and analysis they clearly state their brief and often this will have been modified in some way from the initial project identification. Almost all of the candidates had gone on to write a design specification, however, most of the moderation team reported that many points lacked the technical and measurable aspects required at this level. We often saw lots of rather vague and general comments that lacked measurability.
A typical poor response in this section, under "size," they offered, "large rooms must be big enough to comfortably fit." "The product must be large enough to fit medium to large items on." "The bed should comfortably fit the child."
A common theme… Candidates missed the inclusion of key sizes, weight, and cost. The specification must be a synthesis of the information found at the research stage that is key to designing a successful product.
Where the specification was completed well the candidates then went on to remain focused in the design phase and then have a sound foundation to complete a realistic technical testing and evaluation phase. This is an important section of the assessment criteria and should not be underestimated as it does have a 'knock on' effect across the portfolio.
The Centre assessment was therefore somewhat lenient.

Overall, in part one of the assessment criteria the Centre assessments were on average mark above the moderation team's assessment.

Part 2: Designing a prototype.

Grid 4: Design ideas
In this section it is expected that a range of design strategies are used to produce a range of design ideas that address the specification criteria from the previous section.
Design strategies include elements such as 2D, 3D, subsystem details, inspiration materials, work of other designers and cultural historical influences. Candidates should be thinking like a commercial designer and apply their knowledge of technical skills and materials and back it up with the research they have carried out previously, and any additional research.
Annotation should illustrate the candidate's knowledge and understanding of technical elements such as materials, processes and techniques that are relevant to the identified design area.
Some candidates would have benefitted from more constructional detail and depth, a majority of design ideas lacked sufficient technical and constructional detail, often concentrating on purely formal or holistic design elements. There were too many examples of 3 pages, one basic sketch on each, and an attempt to identify materials and simplistic sub-system detail.
Client interaction often failed to convince and rarely influenced design development beyond a superficial level, and third-party feedback was often congratulatory rather than critical and constructive. It is here where the candidates often failed to access the highest levels of this criterion as evidence of truly iterative, client/specification focused, technical and original work was notable by its rarity.
In contrast there were some examples of very accomplished, rapid, detailed sketching techniques from a limited number of centres, employing the proficient use of a range of graphic techniques, and a clear conversation undertaken with the client illustrating a real iterative methodology. The overall centre assessment was lenient.

Grid 5: Development of design ideas into a final design.
This section in the assessment criteria improves year upon year as the candidates understand that they must model to test elements of the proposal which has to trigger a conversation with the client or interested stakeholders. It is a pity that this iterative methodology is not seen across the whole of the portfolio, it must be remembered that the iterative design process is enshrined in the aims of the qualification and not just in individual assessment criterion.
We did see some very good modelling and experimentation to test aspects of the design and indeed the manufacture, this experimentation must be relevant to the proposal and therefore focussed and a result of client conversations. The use of CAD packages is also to be commended where they show detail and 'trigger' iterations after further client conversations.
In the best cases as a result of client dialogue the candidates often undertook further research and then incorporated this into the developmental work, this again mimics commercial practice and is therefore to be commended.
The moderation team reported positive outcomes for the higher marked candidates.

"...Those that used an iterative process and involved testing / modelling did very well and was easy to see how their thinking moved forward...."

"...The higher marked candidates used the client well in this section..."

Where there were shortcomings, it was often due to modelling that was holistic rather than testing elements of the proposal or indeed a step-by-step reproduction of the proposal drawn using a CAD package with no real development.
The moderation team broadly agreed the centre assessments in this criterion.

Grid 6: Final design solution
This section again improves year on year, partially as the candidates gain a greater understanding of the CAD packages that they are using, again as reported in previous PM reports the key to unlocking this criterion is the ability to third party manufacture. The candidates should be encouraged to edit the dimensions not simply rely on the software that may give dimensions to three decimal places. The manufacturing specification is also a key to success in this section. It is not a step-by-step guide to manufacture rather a list/description of the materials operations and dimensions required to complete the parts to ensure completion.
There were mixed examples of engineering drawings, invariably produced using a CAD packages; however, on occasion they lacked sufficient dimensional detail to allow interpretation by a third party. In particular, architectural modelling solutions were often the least well detailed. We saw extensive production plans but often, in the old style of a step-by-step production plan. It would have been good to see more exploded type views detailing construction. Some included detailed calculations and waste reduction strategies, but this was not common.
That said the centre assessment often seemed to have recognised these shortcomings and so the centre assessments were broadly accurate indeed the analysis shows that the moderation team, on average, felt that the centres were very slightly harsh.

Grid 7: Review of development and final idea.
This section is where the candidates must undertake an intellectual analysis of the work they have undertaken so far, the commentary must be analytical and evaluative it must not be simply descriptive. In the best cases there should be strength and weakness analysis that provides balance and should consider all factors such as materials, processes, techniques and have reference to feedback. The evaluative element must be balanced and ensure that any conclusions undertaken can be supported.
The Centre assessment was generally accurate in this criterion but at a low level, the candidates are not undertaking an intellectual analysis of the proposal, moderators were told to look at evidence across the portfolio of this analysis but on average the scores were only just above half of the marks available. It is important that the candidates incorporate client and stakeholder opinions that have real rigour to it. All too often the client interaction was descriptive and lacking in terms of a critique of the proposal.
In a number of cases the client input did not feel genuine, we saw several instances of clients being drawn from family/friends who failed to offer objective feedback throughout project - commentaries were often largely congratulatory.
The candidates, in this section are missing out on opportunities to gain further marks as this section carries 12 marks and they are, in general, only accessing marks up to early level 3.

Grid Eight: Communication of design ideas
This section splits into three distinct sections in that we should see evidence of more traditional communication techniques along with CAD and written communication.
It is pleasing to report that many candidates met the higher-level descriptors within this grid, in most cases the assessment was broadly in line with the specification criteria. The average score was close to the level 3 borderline. Some centres that had access to more advanced CAD programs produced work of a very high standard, including walk through animations and time lapse simulations especially in terms of architectural models. The centres should be aware that the awarding of these marks can run throughout the ideas and development sections. In the best submissions the annotation was mature and evaluative with real reference to technical elements that reflected the client and illustrated sound knowledge and understanding.
Where there were small differences, it was due to low level sketching techniques, this seems to be a trend currently, and poor written communication especially in terms of technical knowledge, understanding and vocabulary.

Part 3: Making a final prototype.

Grid 9: Tools and equipment
In almost all cases the candidates had produced complete final outcomes for this section, on occasions they did not show the sophisticated selection of appropriate materials, fixtures, components and fittings together with the accomplished and accurate use of tools, equipment and techniques expected to warrant the marks awarded. Candidates should be encouraged to demonstrate a wider range of skills and processes in making their final outcomes. . Some centres offered more simplistic, seemingly centre led making tasks which although completed well, limited access to the higher levels in this criterion, the work of some centres did not include a making diary in the folder which limits the evidence for awarding in this criterion.
That said where the work had some complexity the candidates thought through the materials and processes and made good decisions regarding the use of tools and equipment, this is to be commended, and was recognised by the moderation team. Indeed, in some cases the candidates resolved issues, made jigs or fixtures to enable manufacture and consulted with the client to continually develop the proposal. This is very much in the spirit of the qualification and was rewarded at the top level in this criterion to.

CAM in the form of Laser Cutting and 3D printing was used and in the best scenarios as a process alongside other traditional/innovative making techniques. Good photographic evidence in the form of a record of making was shown in the majority of coursework pages with good annotations explaining the reasons and choices.
Overall, the centre assessments were slightly lenient when compared to the agreed national standard but marks at the very highest levels are still available to candidates that illustrate that iterative collaborative approach.

Grid Ten: Quality and Accuracy.
This section should be characterised by demonstrating high level making skills that.
evidence accuracy leading to a quality artefact that is fully functioning prototype that meets the end user needs identified in the specification. We should also see candidates not being afraid to consult with the interested parties and amend the design during the manufacturing because of this consultation or indeed in response to issues experienced during the manufacturing process, therefore evidencing an iterative approach during the manufacture.
Most candidates had produced complete and functional final outcome appropriate for this specification, however, on occasions they had not demonstrated the skilful or accomplished advanced level making skills expected to warrant the mark awarded by the centre. Sometimes the quality of finish tended to let the centres down this was especially true in terms of the detailing of architectural projects, candidate must think carefully about how the architectural products mimic the real thing to illustrate those complex manufacturing skills. An overreliance of MDF laser cut and brick paper does not demonstrate the A level complexity we are looking for to access the highest levels of this criterion. We did also see some big pieces of furniture were rather crudely finished. Candidates should be encouraged to make more use of complex processes that allow these advanced level making skills to be demonstrated during the production of their prototype.
Where the students complete this category well, the prototypes produced were of an extremely high standard and quality. The best work seen was commercially viable.
Overall, the section was leniently marked across this series, the work often lacked the finish and accuracy required for example slab construction in sheet materials or simplistic glue and screw techniques. Candidates should be encouraged to think carefully about the 'how' of the manufacturing process to ensure that they fulfil the need to illustrate those complex manufacturing skills required at this level.

Grid Eleven: Testing and evaluation.
In this section we are looking for the candidate's ability to discern the difference between testing and evaluating. The notion of testing implies putting the product into service and considering its success, especially in terms of the specification and the clients' needs wants and values, whereas in the evaluation phase we are looking for a critical review including strengths and weaknesses which will then give a balanced conclusion supported by all of the analysis undertaken. It is imperative that the client and/or interested stakeholders are consulted in this section, the narrative must be meaningful and adopting the position of a 'critical friend'. This could lead to further suggested modifications therefore illustrating a post manufacture iterative approach. The definitions in appendix 5 of command words especially Analyse and Evaluate in the specification may help with candidates further understanding.
Overall, the moderation team reported that the centre assessments were too lenient when compared to the national standard. Most candidates evaluated against their specification points using this as one form of testing and then completed an overall subjective evaluation.
However, often specific tests were missing, the product could be seen being trialed by fellow candidates, with superficial comments. However, load testing, confirmed dimensions or any technical testing was fairly rare.
Evidence of client feedback and client testing in final location was included by some of the candidates, and there were some very good examples of testing strategies, allowing candidates to access the top tier. That said often the lack of measurable criteria in some

specifications made it impossible for some candidates to plan, describe, conduct, evidence and analyse objective and quantifiable tests. The relationship between the specification and the evaluative commentary should not be underestimated, as is the dialogue undertaken with the clients/stakeholders. As last year, where client/stakeholder/user group input was included, it was often superficial, and in many cases, was not always followed by sufficiently perceptive analysis.

Many architectural projects struggled here and consisted of a poor quality 'client comment'/survey and a subjective commentary against weak spec criteria.

Most candidates produced a life cycle assessment, with the best being linked and specific to their actual product however many were rather generalised. The highly awarded candidates also discussed the social, moral, ethical and environmental impact of their prototype.

Conclusions

The centres must try to embrace the iterative design process across the whole of the portfolio if they are to access the very highest levels of the assessment criteria. This has been stressed throughout the training program over the last year, but progress is rather slow in this regard. We are seeing a return to products that are the 'real deal' and less of the proof of concept, which is to be commended, and this will help with the production of more complex innovative products.

It cannot be stressed enough that at the top level the work of the candidates can be breathtaking and should be celebrated, we have seen this year a vast range of products well designed and wonderfully manufactured, the Design and Technology community should be immensely proud of some of the projects undertaken.