GCSE 2003
June Series

ASSESSMENT and QUALIFICATIONS ALLIANCE

Report on the Examination

Design and Technology
Product Design

■ Full Course

CONTENTS

Full Course

Design and Technology: Product Design

Examination Papers

Tier F

General

The examination paper allowed candidates the opportunity to demonstrate their knowledge and understanding of product design using a wide range of media.

It was noted that a number of candidates gained high marks on this paper demonstrating a truly integrated approach to design and technology. The vast majority of candidates answered questions, throughout the paper, from different media areas, although at times with insufficient specific knowledge to gain full credit for their answers.

Graphical communication skills were generally very limited, with some candidates unable to express their intentions fully or clearly enough to gain higher marks.

In general all questions were attempted and written presentation was, on the whole, acceptable.

The presence of an irregular red dot, found mainly on the photograph of the 'Synthetic Sports Shorts' Figure 1, that appeared on some of the colour Insert sheets did not disadvantage candidates. Those who had interpreted this as a 'button' on the shorts were given credit, mainly in Questions 3 and 4 (c).

Question 1

Many candidates were able to identify three methods of research, but often failed to relate their answers to the specific focus of the question. Those candidates scoring full marks offered three distinctly different methods of research, qualifying their answers in the context of the question.

Question 2

(a) A wide combination of products were chosen from the range given in the photographs, but very few candidates were able to specify correct materials or ingredients for these products.

Properties or nutritional values of materials and ingredients were not well understood by candidates, consequently very few marks were awarded in this section.

Many candidates however did understand 'scales of production' and correctly identified suitable scales for the chosen products.

(b) The non-combustibility of ceramic materials was recognised by many candidates and some candidates were able to specify a range of suitable properties, from 'ease of shaping, through to the aesthetic qualities of glazing' to gain a mark. However, very few candidates gained both marks available.

(c) (i) Very few candidates were able to identify correctly the meaning of the CE symbol, often incorrectly relating it to the 'copyrighting' of products.

(ii) Again very few candidates were able to relate this to 'customer confidence, widening the market throughout Europe, or the product having reached a standard of quality and safety.'

(iii) Many candidates gained one mark here for correctly identifying one element of the acronym but few were able to state the full meaning.

(d) (i) The majority of candidates were able to demonstrate an understanding of why the label should be included, but failed to give sufficient detail in their answers to gain full marks.

(ii) Most candidates were able to identify at least one piece of information from the label.

Question 3

The question was not well answered. Few candidates demonstrated sufficient knowledge and understanding of the requirements, techniques and processes involved in making products to score significant marks. Often the sub-headings, given to aid candidates plan their answers, were ignored and consequently insufficient information relating to specific stages in the process was presented. Too often generic terms for materials, tools and equipment were given and accordingly gained few marks. Graphical presentation, annotated sketches and notes were generally poorly presented.

(b) Most candidates attempting this question gained at least one mark for identification of a suitable safety precaution, however some candidates were far too general, unqualified or presented inappropriate answers such as 'wear gloves' or 'do not put hands near blade'.

(c) 'Quality control' was often confused with 'safety' in all media areas and many candidates incorrectly made reference to 'final' product checks.

Question 4

(a) Most candidates were able to state at least one functional requirement but often did not give sufficient detail, relating to physical or aesthetic functions for the full mark allocation.

(b) Again many responses lacked sufficient detail, description or appropriateness of test, relating to the chosen product, to warrant full marks for each response given.

(c) This part of the question was not particularly well answered. Few candidates were able to name specific materials or ingredients for modifying the chosen product with generic names being given.

The standard of sketching and annotation was generally very disappointing. Many responses to the question failed to show any significant modifications to the product and the notes presented lacked detail.

Question 5

(a) Most candidates were able to offer at least two different reasons for packaging and the question was generally well answered.

(b) Many candidates gave responses that related to the advantages and disadvantages of the 'types of packaging' rather than the 'materials' used. Reference to recycling proved to be the most popular response for the advantages and many candidates correctly identified the disadvantages of using glass in drinks packaging.

(c) Many good responses relating to 'reduce', 'reuse', 'recycle' were given, but a significant number of candidates related their answers to identifying strategies for the 'disposal' of rubbish.

(d) (i) Most candidates were able to identify the 'carton' but were unable to identify that it was a 'composite' material in part (ii).

(e) Again poor graphical communication skills resulted in few candidates gaining both marks available for this part. Many candidates were able to identify a correct symbol, the most common answer being the triangular arrows.

Question 6

(a) The majority of candidates answering this question were able to produce a simple initial idea for packaging their chosen product. It was encouraging though to see a small number of high level design responses where candidates had addressed features such as 'flat-packing', 'internal protection', 'fastenings and closures', 'windows', 'ease of carrying' or 'orientation of printing graphics'.

The quality of notes and 3D sketches though was again rather disappointing throughout. Annotation often lacked evidence of analytical thinking and sketches were poorly presented, too small to show detail or untidy.

(b) Many candidates presented 'some evidence of a workable final solution', and included 'two or three pieces of vital information' such as 'bar code, recycling symbol, BSI symbol, materials used or dimensions' but were let down by lack of clarity and poor presentation.

Question 7

(a) Surprisingly few candidates were fully conversant with the acronyms CAD and CAM.

(b) Candidates failed to gain marks here if they had not read the question correctly. Many responses related to how CAD in part (i) and CAM in part (ii) could be used in 'general

terms' but failed to address the question being asked specifically about the 'design and production of packaging'.

(c) The majority of candidates answering this question demonstrated a clear understanding and gained at least two from the three marks available.

(d) Again a well-answered question with the majority of candidates gaining at least two marks.

Tier H

General

The examination paper encouraged candidates to demonstrate their knowledge and understanding of design and technology across a wide variety of specialist material areas. Many candidates showed a broad knowledge base as encouraged by the specification with a small number being limited in their specialist material knowledge. These candidates often chose inappropriate products as their focus for the analysis and manufacturing questions leading to answers which appeared to be based upon inappropriate, common sense knowledge of materials and manufacturing techniques. Such candidates were unable to differentiate between soft and hardwoods or thermosets and thermoplastics, or they stated that a meal should be healthy, seemingly unaware of the fat content of cheese and the dangers of a high fat diet, or the differences between natural and manufactured fabrics, or types of ceramic materials.

The majority of candidates showed good examination technique though some seemed to miss important instructions in sections of the paper. Centres should be encouraging candidates to consider the mark allocations of questions, ensuring that they give an appropriate number of points in their responses. The lack of knowledge and understanding shown of Computer Aided Design and Computer Aided Manufacture was noticeable and surprising in the context of this examination.

Question 1

A well answered question though it was surprising that at this higher level some candidates did not understand research techniques and included brainstorming or production of ideas in their answer. Some failed to state appropriate computer techniques as required by the question.

Question 2

The majority of candidates answered well and were most successful when they chose two similar products made of materials of which they clearly had a working knowledge. A sizeable minority were unable to distinguish between hard and soft woods or thermosets and thermoplastics and some candidates were unable to name a specific material or its properties. Environmental problems or advantages were widely understood and the vast majority of candidates were familiar with the scale of manufacture. Few of the candidates who chose the food products seemed to have a full understanding of food groups and their nutritional implications.

Question 3

A well answered question but the majority of candidates seemed unfamiliar with British standard labelling conventions. The majority of candidates were able to identify BSI but could not explain what the organisation does, or how to go about gaining BSI approval.

Question 4

(a) The majority of candidates showed full understanding of the term prototype.

(b) A minority of candidates misunderstood reference to production stages confusing them with control systems.

(c) This question gained very mixed responses with some candidates including 'designing' in their responses despite the question being clearly related to 'manufacturing processes'. The best responses were very well structured and showed clear experience and understanding of manufacturing processes, including appropriate tools and equipment. Many candidates illustrated their responses well showing knowledge and understanding of both craft and industrial tools and equipment.

(d) Very few candidates gained full marks as they were unable to explain necessary health and safety precautions to be taken using relevant equipment.

Question 5

(a) and (b)(i) were generally very well answered with candidates showing good understanding of the reasons for packaging and the environmental problems created, but only a minority of candidates fully understood the nature of a composite material as requested in (ii).

Question 6

A well attempted question, but only a minority of candidates gained full marks by showing flair, originality and imagination in their well presented responses.

(a) Many interesting ideas but annotation was often weak.

(b) Drawings were generally good with information presented in a variety of ways from superb detail to simple labels with arrows. A minority of candidates did not produce a net.

Question 7

(a) and (b) were not answered well. The majority of candidates seemed unaware of the differences between CAD and CAM. Few candidates made reference to the advantages of using CAD for manipulation during designing and even fewer showed any understanding of specific computer aided manufacturing processes.

(c) Answered well with a good understanding of appropriate energy sources but a minority of candidates were unable to give advantages and disadvantages.

(d) Answered well by candidates showing a high level of understanding. However many candidates showed no understanding of the context of this question.

Question 8

(a) Generally well answered with only a minority of candidates referring to items for sale rather than the shop layout.

(b) Well answered though drawing quality was often lacking.

(c) Well answered with fully supported reasons given.

Coursework

General

Many centres had marked the design folders well within the AQA tolerance. However, the assessment of the practical outcome was often out of line, requiring some adjustment to be made. Many centres had used inappropriate tasks or ones that restricted access to the higher marks. Graphical outcomes of low demand, including business stationery, were commonplace and many centres had not achieved a satisfactory balance between the designing and making components, giving too much importance to the creation of a design folder at the expense of the higher weighted making component.

Designing Skills

The quality of work submitted was very high from a significant number of centres and it was clear that many candidates had spent far in excess of the recommended hours on this aspect of the coursework.

Whilst many centres had made a very real effort to encourage candidates to produce a concise design folder of around 20 sheets, moderators reported marking a significant number of folders which contained in excess of 50 sheets and in some cases over 100! There is a tendency for some centres to encourage candidates to include large amounts of copied material. Some centres are encouraging candidates to double or treble mount insignificant items, such as copied research material. This simply increases the postage costs to centres and makes the process of assessing the relevant work harder for moderators.

The best design folders seen were often a combination of sketchbook-like pages with some formal presentational sheets. Many candidates made effective use of ICT to present a lot of their design investigations in a space efficient manner. Digital photography was extensively used by candidates as both a research tool and for recording the various stages of their work. Where photographs of work in progress were provided the moderators found it to be of enormous benefit in deciding whether to accept the centre's marking.

Design brief

Centres were often encouraging candidates to explore several potential design briefs then select the most appropriate one to continue with. Whilst this is a sensible teaching strategy it should not form part of the design folder as it can lead to confusion. Candidates should be encouraged to submit only material which is relevant to the problem undertaken. A simple statement of intent is all that is needed. Some centres were encouraging candidates to expand on this, clearly identifying the design problem, potential market etc. This was sometimes supported with mood boards. Where this approach was taken, full credit was given within the analysis section of the assessment criteria. Initial specifications were sometimes found at this stage of the folder and often provided a focus for relevant research.

Research

This section of the design folders produced some very different results. In the best examples, candidates had submitted only relevant material often summarising this data as an aid to writing the specification. It was pleasing to report how many centres had adopted a product analysis approach to researching, with candidates using commercial products as a focus for their own designing. Many centres had encouraged useful primary research, although it is important to note how few candidates gained significantly from questionnaires. This was often due to not collecting reliable data from the target users. Where centres had adopted group questionnaires, for example, on the purchasing preferences of teenagers, the data was often more reliable and useful to the candidates. It is important that candidates understand that it is the analysis of data that is more important than simply the collection. Some candidates had made excellent use of interviewing experts such as parents, teachers etc.

Letters to companies rarely provided useful material. Centres need to understand the actual cost of providing such catalogues and advice for the large numbers of candidates undertaking coursework projects. It is suggested that centres build up a product library of catalogues and brochures for candidates to access in preference to wasting time writing formal letters.

Far too many candidates had large collections of irrelevant research such as photocopied data on materials and jointing methods from textbooks, CD ROMs and the Internet. In extreme cases this often resulted in twenty or more pages. It is important that centres discourage this practice and encourage candidates to summarise their findings, listing the full extent of the research undertaken and the relevance to their project.

Some centres were also encouraging candidates to include photographs and plans of the exact location of their final product. This is a major concern, as clearly, these centres have not understood the nature of this Product Design specification. Candidates should be designing for a commercial need and for commercial manufacture rather than a one-off product for their own bedroom.

Analysis of task and research material

The inclusion of a simple list of tasks to be undertaken was an aid to many candidates. The better candidates often explaining why, how and when the task would be completed in an action plan. Some centres had devised pro-formas to aid candidates with this difficult area. Research material was often described rather than analysed. The simple question "How is this relevant to my work and what can I learn from this?" applied to all research material would have aided many candidates.

Specification

This section was often poorly undertaken. Many centres had directed candidates to cover general areas such as:

Target market Who is the target market? Having conducted research do you need to revise what you wrote in the design brief?

Function	What does your product need to do?
Size	Are there any restrictions? Can you specify a size at this stage?
Weight	Is this important? How will the customer transport it home?
Durability	How long do you expect your product to last? Will there be any maintenance issues, such as the need to replace batteries? Storage issues?
Aesthetics	Does your product need to match a particular style? Consider colour, form, proportion, pattern and texture.
Materials	What type of materials do you think are most appropriate? Do they need to have specific characteristics such as fireproof, waterproof, easy to clean strong, flexible etc.?
Safety	The British Standards Institute produce guidelines for many products. Does the product need to conform to any regulations/legislation?
Cost	Is there a limit on your development budget? Does your product need to compete on price with similar products?
Green issues	How environmentally friendly will your product need to be?
Manufacture	Does your product need to use specific processes? What scale of production are you expecting your product to be manufactured using?
Packaging	Does your product need to pack flat? Do you need to include assembly instructions or guidance for its use? Are there protection needs?

Many candidates presented a design proposal at this stage, rather than design criteria, listing the materials construction etc. before designing had commenced. This was clearly restricting the generation of ideas. Some centres adopted the approach of exploring a range of ideas

before finalising the specification. This often allowed candidates to clarify their thinking and demonstrate their creativity. Although this contradicts the wording of the assessment criteria, moderators gave full credit to such an approach.

Some of the more able candidates produced more than one specification, including a manufacturing specification within the design proposal or as part of the evaluation. Again, full credit was given for this approach even though it is not a specific requirement.

Specifications, however written and presented do need to reflect the analysis previously undertaken. Moderators reported that many candidates at all levels were not making this connection obvious. Where candidates had summarised their research this link was often easier to evidence.

Generation of ideas

This was a strongest part of many folders with both creativity and originality evident. However, numerous centres appeared to have directed candidates to produce four to six superficial ideas and had over-rewarded this achievement. More able candidates had demonstrated a variety of approaches from freehand drawing, sketch modelling, word webs, test experiments etc. The important issue is whether a third party can assess the feasibility of the ideas. Whilst the more able candidates had often thoroughly annotated the ideas, too often superficial single-view sketches were submitted with no indication of the materials and constructions that would be used. Higher-level candidates summarised and evaluated their ideas giving clear information on why one or more might be further developed.

Whilst it is expected that many candidates will draw ideas that closely resemble existing products it is vital that this is clearly indicated in the design folder or in the candidate declaration when it has been the case. In several instances centres were over-rewarding work that was blatantly copied from other sources.

Development of a solution

A broad range of work was seen at this level. Far too few candidates undertook any real development of their ideas and simply redrew one of their initial ideas as a design proposal. Indeed, moderators reported that many simply moved from ideas into a making plan. Many candidates did not provide anywhere near enough detail for third party manufacture to be attempted. However, moderators saw many examples of high-level work, particularly where candidates were producing textile outcomes or utilising CAD/CAM. Design details were often considered in depth with alternatives explored for decorative or construction details.

Testing is seen as an important part of the development section and, where relevant, should be encouraged and evidenced. This is by far the most appropriate time for candidates to undertake additional research into materials and constructions. A short investigation of relevant stock sizes and standard components was a useful addition for some candidates and full credit was given within the development section.

Planning of making

Pro formas were put to good use by many centres. Where flow charts were used, more able candidates were able to indicate the quality assurance/quality control checks that would take

place at various points and the action that would be taken. The use of patterns, templates and manufacturing aids were often missing completely even though they formed an important part of the planning for many candidates. Cutting lists for materials was a surprising omission from many design folders and few indicated the additional components that might need to be purchased, such as jewellery findings, zips, hinges etc. Many candidates appear to have been simply supplied with materials and this gave little opportunity to gain marks.

The use of diaries to record the stages of the making was seen in many centres. Full credit was given to planning as long as there was sufficient evidence to support the judgement that planning had taken place. Where moulds, formers, jigs, manufacturing aids, CAD/CAM, patterns etc. had been used, some credit for planning was given even if there was no relevant written plan in the design folder.

Some of the more able candidates presented design proposals in sufficient detail that a separate planning document was not required. Again, credit was given when it was obvious that some planning had taken place.

A significant minority of centres had encouraged the use of diagrams to explain basic making processes such as using a try square or applying spray paint. It cannot be stressed enough that this is not what is required. Centres are encouraged to look at how industrial planning takes place and the use of simple pro formas and notes will often result in a more efficient use of candidates' time.

Evaluation, testing and modification

This was a weak area for many candidates. Evaluation evidence should be found throughout the design folder. Many candidates offered only a superficial final report, often just a few sentences. Centres often appeared to be encouraging a detailed evaluation of the process when it is the evaluation of the product, which is the most important.

Generally, not enough time had been allowed for this part of the design component. However, it was clear that some centres had provided a great deal of guidance and support for this work. Pro formas were used to good effect with checklists linked to the specification criteria found in the better examples. The use of real consumer trials were found in some folders with independent feedback provided by potential users. Superficial comments from friends often produced worthless data but some surveys provided valid results, which were then commented on by the candidate.

Far fewer candidates than expected used the summative evaluation report to indicate the modifications that would be needed to the prototype in order to commercially manufacture the product. A small number of more able candidates made use of the products that were collected and analysed in the research section and made comparisons with their own design solution. In the best examples, candidates were noting costs, marketability, improved features etc.

Use of communication, graphical and ICT skills

There is still a tendency for many centres to encourage use of over-elaborate titles and borders and to over-reward this section. There were numerous candidates who demonstrated a range of very high quality communication skills. Whilst the 40-hour requirement for the

coursework does impose some challenges for centres, there is a need to demonstrate good communication skills. Centres will need to discourage time-wasting activities such as colouring the background of design sheets and using coloured mounts in favour of generally clear communication. Higher-level skills should be found in some sections of the folder. However, it is not expected that every sheet is presented as a pristine end product but the folder clearly and concisely demonstrates effective and efficient design skills.

Some very good "rough work" was seen in the ideas and development sections and it was pleasing to note how many centres had responded to the advice of not re-presenting such work. Many candidates were able to sketch fluently and efficiently, using notes to clarify their thinking. A wide variety of presentational drawings and working drawings were seen. Fashion drawings combined with patterns, engineering drawings, marker rendered 3D views and ProDESKTOP virtual modelling was seen in the folders of many of the better candidates. DTP was evident both for the presentation of the design folder pages as well as for the creation of related graphical components such as packaging, labelling and leaflets. Modelling was less commonly evidenced in the folders although sometimes made available during the visit.

Many candidates used CAD effectively, although a concern was raised by moderators to the "lost" development work, which was undertaken on computers and not evidenced by either candidates or the teacher annotation.

Many centres still reported inadequate access to ICT facilities. It was clear that where effective use of ICT was used that this did have a positive effect on the marks gained by candidates. Photographic evidence was often abundant in the better design folders.

Social issues, industrial practices and systems and controls

Moderators reported that the majority of centres had not addressed this aspect of the coursework and is perhaps indicative of the transition from a craft based approach, which is still taking place. Many candidates had approached this as a bolt-on at the end of the folder. Copied material on general issues related to the various scales of production was the most common evidence seen. Many centres appeared to be providing handouts for candidates to put into their own words as every candidate had near identical evidence. In some cases centres were providing sheets with jigs on, for example, and the candidates were simply annotating in a general manner. Few demonstrated any real understanding of how their prototype might be commercially manufactured. Fewer still had taken into account the impact their design might have on society, for example, through over packaging. These are major areas for centres to address both to meet the coursework criteria as well as adequately preparing candidates for the written paper.

Where centres had thoroughly addressed this aspect, candidates provided a good understanding throughout their work. References were made to commercial production in the specification and throughout the designing. Better candidates had noted, for example, that the casing for their product would be injection moulded from ABS, whilst many indicated that the model would be shaped from rigid foam or MDF, making no reference at all to the commercially manufactured product.

The important issue of whether candidates are modelling a design or designing a model is an important distinction. The majority appeared to have been designing a model or prototype

and thinking no further down the development line. The complexity of some projects made this aspect of the work extremely difficult and especially so when candidates had tackled large-scale architectural problems.

Making skills

The full spectrum of work was seen. Whilst the majority of centres had produced work using resistant materials and card, all materials listed in the specification were seen. Few centres offered food products or ceramics. A small number included control materials and a slightly larger number included textile products. The overall standard was disappointing in many centres, although moderators reported work of A Level standard from some candidates. Few centres had fully embraced the multi-material approach, often severely limiting the candidates (sometimes because of resource implications) to a very narrow band of materials and manufacturing processes.

Correction of working errors

Many candidates did not provide evidence of this aspect of the work and moderators often needed to rely on teacher annotation. More able candidates had undertaken some testing before commencing the final product and had clear evidence of modifications. Where candidates had made no obvious errors in the manufacture of their prototype or model but had described changes needed for commercial production full credit was given. The use of filler, for example, to correct mistakes, clearly, did not receive high credit. Candidates, through choice or necessity were often undertaking work in inappropriate materials. It is important that candidates can explain the modifications needed when a more appropriate material could be used.

Use of appropriate equipment and processes (including the use of CAM)

Once again, moderators often needed assistance from teacher annotation to make a judgement in this area, as candidates often did not provide details of the equipment or processes used. It is expected that centres will give considerable guidance to individual candidates on the appropriate use of equipment and processes taking into account skill levels and the required standards. A disappointing number of candidates used construction techniques that were unsuitable both for commercial production as well as prototyping. Glued and pinned, screwed and filled constructions were very common. Larger materials were often cut out by a teacher/technician and the candidate simply finished and assembled components.

More able candidates produced some very high level work. Where CAM was available this undoubtedly had a positive impact on the work seen.

Many candidates used computer printouts of one form or another and claimed this as appropriate CAM. Whilst this is undoubtedly the case with many graphical products, moderators were looking for this used with die cutting tools or other aids to access the higher marks. Some centres used this as part of a transfer printing system, for example. Computer printouts on their own were judged as undemanding outcomes and candidates who produced a simple set of printed stationery items did not score well in this area.

Production and effectiveness of outcome

Once again, higher-level candidates produced very effective products with commercial viability. Many of the better products seen were produced in fabrics or sheet plastics. Some high-level craft skills were evident in all material areas. However, some centres are still reliant entirely on hand production techniques.

Level of accuracy and finish

Many candidates undertook inappropriate projects given the time limitations and resource implications found in many centres. Moderators reported that many candidates displayed poor levels of accuracy and much of the work lacked any appropriate finishing. Where candidates had access to CAM it was often easier to access the higher marks.

Spray painted models of the highest quality were seen when candidates had been modelling injection-moulded products. Timber products such as furniture were often poorly varnished or painted and moderators commented that this was partially due to the large scale of some of the projects attempted. Candidates appeared to have simply run out of time.

Some textiles products were finished to a commercial standard and displayed high levels of accuracy. Moderators reported seeing some excellent examples of prototypes that were often packaged or labelled and appeared to be very similar to commercial examples. In these instances, candidates had generally undertaken more appropriate projects. Board games were a particularly good example.

Use of Quality Assurance (QA) and Quality Control (QC)

Many candidates provided no evidence of this either through the design folder or the manufactured product. Candidates who had utilised CAD/CAM, produced moulds, formers, templates or jigs were much more likely to gain credit for this criteria. Some centres had encouraged a theoretical approach to this with candidates writing an extensive section on QA/QC in very general terms, which gained little credit. Other centres had simply asked candidates to list the quality assurance and quality control measures they would take throughout their work. This was often no more complicated than tacking parts together prior to machine stitching, checking angles in a construction using a try square etc. Moderators were looking for an application of QA/QC in the candidate's making rather than a design folder exercise and sought evidence in many areas, e.g. planning, evaluations etc.

It was pleasing to see how many centres had encouraged some degree of volume production. In some cases this was simply the production of four identical components for a lamp. Some centres had encouraged multiple production with board games being a good example of a project that requires this. CAD/CAM, pewter casting, injection moulding and vacuum forming were some of the processes which allowed QA/QC procedures to be fully utilised.

Quality of written communication

It was disappointing to note how many candidates had not scored well in this area. Where centres had encouraged extended writing, for instance, as part of the analysis or as a formal evaluation report, moderators reported the ease at which candidates could gain a valuable number of additional marks. Word processed reports were found in many of the best examples.

Basic technological vocabulary was a major omission for many candidates. The spelling of subject specific words often prevented access to the higher marks. The over use of pro formas sometimes prevented candidates gaining the higher marks as they were encouraged to use simple bullet points or notes rather than complete sentences.

It is important for centres to realise the weighting of this part of the assessment. Five marks represent the equivalent of a candidate moving more than a full grade on the designing mark. A structured approach to extended writing would be a very efficient use of time.

Moderator visits

Moderators were very well received, and centres had gone to some length to provide a suitable location and laid the work out well for moderators.

Whilst the letter to centres required the sample to be laid out in total mark rank order some moderators commented that it was easier if the rank order for just the making component was used. This would certainly have been helpful when work was from different teaching groups, as internal standardisation was often an issue.

Some centres had included all of the development work, models, test pieces etc. and this was found to be very helpful for the moderators who could re-check, for example, the development mark. Where centres had disposed of such material the assessment often relied entirely on the candidate to record such details in their folder.

It is disconcerting to note how many centres needed to substitute practical work that had gone missing or had been badly damaged. Whilst storage is a major problem for many centres, it was clear that centres that had undertaken smaller scale projects and packaged them had fewer difficulties.

In the better-organised centres the work of every candidate was clearly labelled and stored for easy retrieval. This was often easier if the physical size of projects had been restricted. Some centres had allowed candidates to work on inappropriate projects that could not be stored within the department. Gaining access to additional samples was difficult in some centres, especially when a number of teachers had been involved.

Internal standardisation

It is a requirement that where more than one teacher is involved in the assessment of work that internal standardisation is carried out. This needs to be rigorous and ensure that all material areas and teachers are involved.

Administration

Some *Coursework Mark Lists* were not sent promptly to the moderators who reported some very long delays by some centres.

Candidates' work was generally annotated by the centres. Some centres just put a grade for each element on the *Candidate Record Form.* The message taken away from some teachers' meetings was that annotation was not needed. However, it is important that teachers understand the importance of annotation, especially where the candidate's evidence has gaps, or when additional help has been given, where the moderator will require information to support the centre's assessment.

Design folders were generally good although there were a significant number of centres that appeared to have neither checked the content of the folders nor made any attempt to ensure that the work was securely bound. Moderators reported pages that were upside down and in an illogical order. Loose pages were a common problem. The importance of submitting the design work in a manner that is easy to access for moderation was not recognised by many centres. The best examples were securely bound with many centres adopting lightweight plastic folders with separate clear inserts for pages. This was particularly useful when sheets were of different sizes or when textile samples were included.

Matrix errors were commonly reported. Missing the *Quality of Written Communication* mark off was a typical error as was reading the matrix the wrong way around, thereby giving the greater weighting to the designing component.

Candidate Record Forms were often incorrectly completed by centres, not signed by candidates or staff. In some cases even candidate names and numbers were missing.

Mark Ranges and Award of Grades

Full Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
Paper	125	140	53.9	20.2
Coursework	95	210	102.8	40.4
Foundation tier overall 3544/F	--	350	156.7	50.6

		Max. mark	C	D	E	F	G
Paper boundary mark	raw	125	72	57	43	29	15
	scaled	140	81	64	48	33	17
Coursework boundary mark	raw	95	60	47	35	23	11
	scaled	210	133	104	77	51	24
Foundation tier scaled boundary mark		350	204	163	123	83	43

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
Paper	125	140	76.6	17.3
Coursework	95	210	163.1	32.9
Higher tier overall 3544/H	--	350	239.7	43.5

		Max. mark	A*	A	B	C	D	allowed E
Paper boundary mark	raw	125	93	84	75	67	53	-
	scaled	140	104	94	84	75	59	-
Coursework boundary mark	raw	95	95	83	71	60	47	-
	scaled	210	210	184	157	133	104	-
Higher tier scaled boundary mark		350	304	272	240	208	163	140

Although component grade boundaries are provided, these are advisory. Candidates' final grades depend on their total marks for the subject. In particular, A* is determined on candidates' total marks, not on each component, and candidates do not have to obtain 95 marks on the coursework component in order to gain grade A* on the subject as a whole.

Provisional statistics for the award

Foundation tier (4006 candidates)

	C	D	E	F	G
Cumulative %	18.5	46.8	70.8	86.9	96.1

Higher tier (5473 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	4.5	25.5	53.5	78.6	94.6	97.1

Overall (9479 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	2.6	14.7	30.9	53.2	74.4	86.0	92.8	96.7

Definitions

Boundary Mark: the minimum (scaled) mark required by a candidate to qualify for a given grade. Although component grade boundaries are provided, these are advisory. Candidates' final grades depend only on their total marks for the subject.

Mean Mark: is the sum of all candidates' marks divided by the number of candidates. In order to compare mean marks for different components, the mean mark (scaled) should be expressed as a percentage of the maximum mark (scaled).

Standard Deviation: a measure of the spread of candidates' marks. In most components, approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation from the mean, and approximately 95% of all candidates lie in a range of plus or minus two standard deviations from the mean. In order to compare the standard deviations for different components, the standard deviation (scaled) should be expressed as a percentage of the maximum mark (scaled).