

GCSE

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Design & Technology

Graphic Products (1972/3972)

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Examiners' Report

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GCSE Design and Technology: Graphic Products
Principal Examiner's Report
Unit 1972

General Comments

This report sets out to provide centres with feedback on this year's graphic products examination. It is hoped that by reviewing candidates performance centres can identify areas where improvements to results can be made next year.

The structure and format of the exam has become established over a period of 4 years. This year there were no significant changes in the structure of the question papers.

Overview

Centres correctly identified the appropriate tier of entry for the majority of their candidates.

The time allocated for the paper was appropriate. There was very little evidence of extraneous doodles or drawing which may have indicated candidates had time to spare. The majority of candidates attempted all questions. There were no indications that candidates lacked the time needed to complete the paper.

Given the stable structure of the examination papers and the explicit content described in the specification it is surprising that the overall performance of candidates is not improving at a faster pace. While some centres have used the inset materials and previous Principal Examiner's reports to improve the performance of their candidates it would appear that these centres are in the minority. Those centres that have made use of the feedback given by Edexcel may have increased their candidate's marks. While this improvement is hard to evaluate quantitatively, this is the impression gained during the marking process. It is anticipated that those new centres that make use of this report and the published inset material will be find it easier to join those centres that have improved their candidate's grades.

Weaknesses

There were four main reasons identified why candidate's failed to score higher marks. These were:

1. The poor evaluation of the design ideas for both tiers of entry.

2. Repetition of one or more design features from design idea 1 in design idea 2.
3. For foundation candidates, the lack of full answers to the two part describe and explain type questions. This was less of a problem than last year due to the decreased number of describe and explain type questions.
4. For higher tier candidates the lack of subject specific knowledge.

As was the case last year there is an impression that insufficient time was devoted by the majority of centres to teaching the theoretical aspects of the specification. The nature of some of the content listed in the specification means that students are unlikely to gain the knowledge required through the production of their coursework portfolios. Centres that provide their candidates with more formal taught theoretical lessons are likely to be those centres whose candidates can access the higher marks available from the examination.

Weakness 1 - Evaluation

The evaluation of the design ideas was an area where many candidates, in both tiers, failed to gain high marks. Too frequently candidates did not evaluate their designs, they simply described them. The evaluation must contain reference to either positive, or negative, qualities of the design. The evaluation must contain information not credited in the design solutions.

Examples of appropriate evaluations are; the underlined sections indicate a quality of the design that would gain credit in the evaluation.

Foundation

Hold the two batteries securely

The two batteries are held in a blister pack where each battery **has its own section**. The batteries are secure because the size of the sections **fit tightly** around the battery.

Allow one battery to be removed without disturbing the security of the other battery.

Each battery can be removed because the card backing has been **cut through a bit** around the back of each battery. Because each battery is **held apart** by the blister pack taking one out does not allow the other one to fall out.

Have a space for promotional information and allow the batteries to be seen.

Above the batteries is a **large space** for promotional information. The plastic the blister pack is made from **see through** plastic allowing the batteries to be seen.

Higher

The shampoo container must be held in one hand and not slip out of the hand when wet

The container has a **small diameter** that will easily fit into one hand. The container **has bumps on it which increase friction** stopping it slipping out of the hand.

The shampoo container must have an easy to open lid that closes securely.

The container has a screw top lid with **ridges around the sides which give grip** to make it easy to open. The screw thread **pulls the lid tight** onto the container making it secure.

The shampoo container must have a space to display the brand name when held in the hand.

There is a space **above where the hand is placed** to display the brand name. This **space is big** making the brand name easy to see.

Weakness 2 - Design Ideas

Many candidates repeated features of design idea 1 in design idea 2. For example numerous candidates produced notes such as “blow moulded from PVC” and placed these next to both design ideas. While a lack of knowledge may be an explanation for some of the occurrences an impression was gained that a lack of awareness of the demands of the question played a major factor.

Weakness 3 - Lack of full answers

Candidates in both tiers frequently failed to gain marks due to a lack of depth in their answers.

Where a question asks a candidate to give, name or state, a one or two word answer or at the very most a short sentence will normally be sufficient. These questions gain one mark per item requested i.e. “Give one ...” gains one mark, “Give two ...” gains two marks and so on. These questions tended to be well answered by candidates.

Where a question asks a candidate to describe something one or two **linked** sentences are required that make reference to more than one point. These questions gain two marks. Candidates frequently failed to gain the second mark available in describe questions. This was mainly due to either the lack of a second point or that several different points were offered but they were not linked.

Explain questions had similar problems to describe questions. Answers to explain questions require a clear or detailed account of something and a

relevant **linked** justification. The most successful answers tended to follow a format of “. . . . because

A good example of an answer to the question about the use of virtual 3D models would be
“Virtual models are cheaper to make because there are no material costs”

Weakness 4 - Lack of technical knowledge

The content of the specification may be considered as being made up of three types of knowledge and understanding;

Knowledge that may be taught during KS3 technology - e.g. the properties of MDF.

Knowledge that may be taught in other subjects - e.g. recycling

Knowledge that is specific to graphic products - e.g. commercial printing processes and their quality control methods.

It is the last type of knowledge, that specific the graphic products, where candidate's performance is the weakest. This type of knowledge will contribute a significant percentage of the total marks available in the examination. Those centres that address this weakness are likely to be the centres whose candidates make the biggest improvement in performance.

The text books published by Heinemann and examination papers from previous years are available to help centres formulate a scheme of work to teach the content.

The lack of subject specific knowledge had more of an impact on those candidates entered for the higher tier than it did for those entered in the foundation tier.

Strengths

Over the lifetime of the course topics such as commercial printing techniques, CAD/CAM, environmental issues have been increasingly well taught by an increasing number of centres. This has made considerable improvements to the grades of those candidates from centres which have focused their teaching subject specific knowledge.

Conclusion

As with previous year's papers the biggest factor preventing candidates scoring higher marks was a lack of subject specific technical knowledge. This

was the focus of the INSET programme that was delivered and was indicated in the Principal Examiner's reports.

Both foundation and higher tier candidates should be taught strategies that will help them to develop technically different design ideas. This should focus on the form of the ideas and the methods and materials of manufacture.

The evaluation of the design ideas may be the area where the biggest increase in marks can be gained for the least expenditure of time.

Suggestions to help improve candidates' performance

1. Use posters around the classroom giving candidates information about the correct names of relevant items of tools and equipment.
2. Use exam papers and marks schemes from previous years to prepare candidates.
3. Ensure candidates are aware of the frequency of the problems caused by failing to read questions properly.
4. Ensure that the specialised areas of the specification are taught.
5. Ensure candidates are aware of the unique properties of the various plastics in the specification that distinguish them from each other.
6. Candidates should be trained to recognise answers that repeat themselves.
7. Group together content from the specification and deliver taught lessons about the grouped items, e.g. a lesson about all the glues listed in the specification.
8. Practice the use of the suggested technique to answer design type questions.
9. Practice evaluation of design ideas.
10. Use examples of existing graphic products to practice writing specification points.
11. Structure revision notes about processes and materials to include the areas of; description, uses / properties, advantages / disadvantages.

The next section will comment on individual questions and how they were answered by the candidates.

GCSE Design and Technology: Graphic Products
Principal Examiner's Report
Unit 1972, Foundation Tier

Question 1

(a)

The majority of candidates were able to correctly identify all the tools. The most common problem was candidates identified the scalpel as a craft knife. A possible approach to improve candidates' abilities to identify items of tools and equipment would be to use posters on the walls to the rooms the lessons are taught in. The Heinemann text book indicates the type of images that may be useful.

(b)

The majority of candidates did not gain full marks for this question. The impression was gained that while many centres have access to the hardware candidates were unable to logically determine the correct sequence. This is a similar type of question to the flowchart that appeared in the 2003 examination. Candidates that had used that paper for exam preparation would have been more used to the format of the question.

(c)

There were a full range of responses for this question. Candidates that scored low marks throughout the paper frequently misread this question and gave details of items produced from plastic, or types of plastic. This illustrates the need to ensure candidates carefully read the questions.

(d) & (e)

These questions were well answered by most candidates. This suggests that centres have taught the theoretical aspects of CAD/CAM and CIM well and are subsequently allowing their candidates to access marks for questions based on the subject.

(f)

Only a small minority of candidates were able to access both parts of the questions fully. The registration mark is an example of part of the specification where candidates are unable to make a good guess at its function, where it had not been taught by centres candidates had little chance of deducing a correct answer.

Question 2

This was the question the majority candidates found the most difficult on the paper. The question tests AO1 which covers technical knowledge.

(a)

Candidates offered a wide range of plastics as answers for this question. It should be noted that the initials of the various types of plastics are all that are required, e.g. PET not Polyethylene Terephthalate. The specification lists a limited range of plastic that students are required to have knowledge of. Many of the properties of these plastics are common across the range. Centres would benefit by identifying those properties that are specific to each plastic and ensuring the candidates are aware of these.

(b) & (c)

Many candidates were able to answer these questions. The impression was gained that this was due to their familiarity with the products. The comments made for part a above apply to the commercial packaging materials listed in the specification.

(d)(i) & (d)(ii)

The answers provided by candidates indicates that they were familiar with the content of these questions. This knowledge would probably have been acquired through practical experience of using printers and paint software.

(d)(iii)

In contrast to parts i & ii most students were not familiar with the use of DTP. A significant number of candidates did not provide answers that related to the specific focus of the question, i.e. how DTP helps the user lay out design accurately. This is an example of a question where candidates would have benefited by reading the question more carefully.

(e)

The use of email and the internet is well understood by the majority of candidates. As a consequence of this many candidates gained good marks in this question. A common reason for candidates failing to score full marks was repeating a statement using different words e.g.

1. It is quicker
2. It gets there without waiting for the post.
3. It is sent immediately.

Candidates should be trained to recognise the shortcomings of answers that repeat creditable marking points.

(f)

This question comes from the area of the specification that covers new and smart materials. As has been the case in previous years this is an area where few candidates had the knowledge required to answer the question. As there are only four new materials listed in this part of the specification it might be

appropriate for centres to spend at least a single lesson outlining the main properties and application of these new materials.

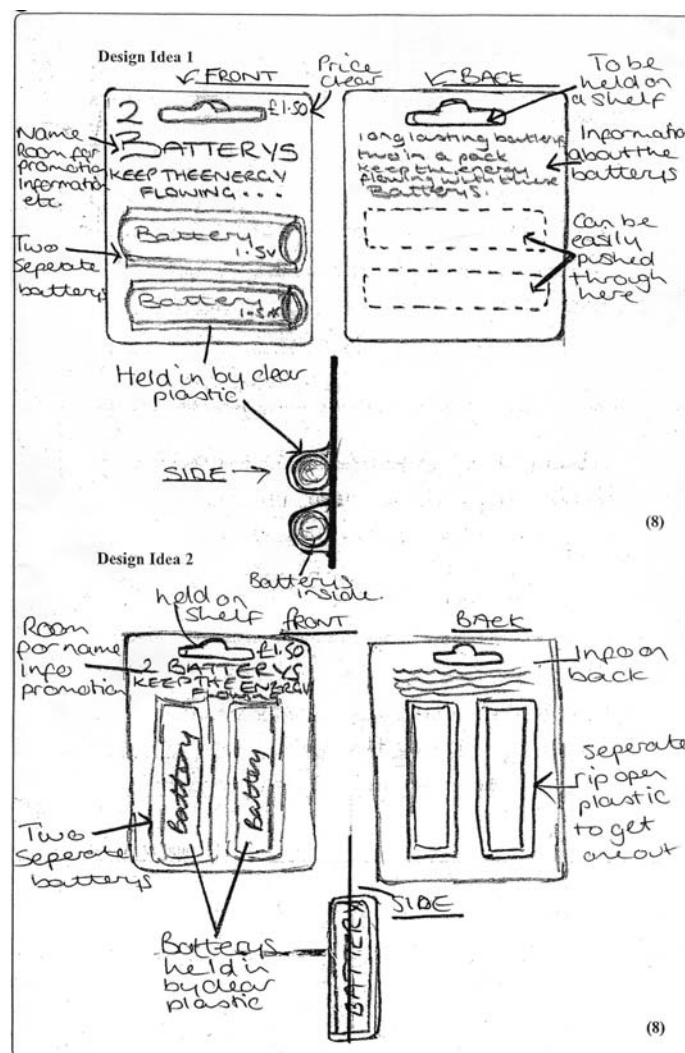
(g)(i), (g)(ii) & (g)(iii)

This question comes from the area of the specification that covers environmental issues. The general concepts of environmental protection are well understood by the majority of candidates. Candidates frequently demonstrated that while they had an overall grasp of the subject they lacked knowledge of the detailed areas described in the specification. As with question f a short amount of time spent teaching candidates about the five areas listed would probably reap rewards.

Question 3

There was a full range of responses to this question. Those candidates that scored the higher marks tended to use several sketches for each design idea.

The image below illustrates techniques that were successful in gaining marks and weaknesses where marks are not gained.



Design idea 1 demonstrates the benefits of using several sketches to communicate design ideas. The candidate has produced an idea that almost gains full marks.

Design idea 2 illustrates a common problem, where candidates produce a second design idea that is a variation of the first design idea. In order to gain marks for the second idea the proposals must be technically or conceptually different from idea 1, not variations of the first idea.

A possible method of answering this design question would require candidates to:

1. Read the question carefully all the way through.
2. Candidates should try to identify existing products they are familiar with that might solve the problem. Could these be adapted to solve the design task?
3. Candidates should read the question again, will the ideas thought of in stage 2 work?
4. Candidates should read the specification points and identify 8 separate marks, underline them.
5. Candidates should think of two very different materials to make the designs from.
6. Candidates should think of two very different shapes for the design ideas.
7. Candidates should again check their thoughts against the specification points.
8. Candidates should sketch out the first design idea. It will help if candidate draw several different views of the idea. Add notes to help explain the idea.
9. Candidates should repeat step 8 for the second design idea, make sure that each point is different.
10. Candidates should check both ideas against the specification points. Ensuring that they have covered all 8 points identified in step 4. Make sure that each of the 8 points is different.

While the above technique may not be applicable for all future design questions it provides a basic structure for candidates to follow.

In order for candidates to improve their performance in the evaluation part of the question centres should ensure candidates are aware of the guidance provided at the start of this report.

Question 4

This year there were often two distinct routes through this question that candidates scored the majority of their marks. Some candidates performed better on questions that required analytical skills, i.e. parts (a), (b), (i), (f)(i) and (f)(ii). Other candidates perform better on sections that required technical knowledge i.e. questions (b)(ii), (c), (d)(i), (d)(ii) and (f).

While the lack of technical knowledge has been raised in previous reports analytical skills have not been given as much prominence before. Centres should consider methods to improve candidates' performance in this area.

(a), (b), (i), (f) (i), (f)(ii)

There is a close relationship between the specification points candidates are required to produce for the examination and those that are required as part of the coursework. Centres might consider adopting the format of the examination, i.e. a point followed by a reason, as a method of writing the specification for the coursework. This should establish candidate familiarity with the requirement to give a point and providing an associated linked reason for the point. Centres that adopt this suggestion should take note of the greater range of essential criteria detailed in the specification compared to the coursework requirements.

A possible method of improving candidates performance in parts (a) and (f) would be for centres to show candidates examples of existing graphic products and get them to write specification points for these objects. The specification points and reasons should cover the criteria listed in the specification. In connection with this task candidates could ask themselves, or each other, questions about why the example is designed or manufactured in a particular way.

A small number of candidates ignored the context of packaging for the specification points they gave. This enforces the need for candidates to read questions carefully.

(b)(ii) & (d)(i)

As has been identified elsewhere some candidates are becoming increasingly familiar, probably through good teaching, with the major technical processes associated with the manufacture of graphic products.

(c)

The limitations of properties that relate to physical attributes of a material have been used in previous year's examinations but still a number of candidates fail to respond to this. Physical properties are those that are intrinsic to a material, such as its hardness. They are not properties influenced by factors such as economics, e.g. low cost or the viability of recycling.

(d)(ii)

Only the more able candidates recognise the limitations and problems associated with injection moulding. This lack of awareness of the problems related to processes has occurred in previous years as well as this year.

A possible structure for candidates to make revision notes about processes would be to cover the areas of; description, uses, advantages and disadvantages. This is a slight extension to the format used in the Heinemann revision books.

A similar structure could be used for candidates to make notes about materials; Significant properties (i.e. those specific to the material not those that could be applied to the whole family of materials), uses, advantages and disadvantages.

GCSE Design and Technology: Graphic Products
Principal Examiner's Report
Unit 1972, Higher Tier

Question 1

This year there were often two distinct routes through this question that candidates scored the majority of their marks. Some candidates performed better on questions that required analytical skills, i.e. parts (a), (b), (i), (f)(i) and (f)(ii). Other candidates perform better on sections that required technical knowledge i.e. questions (b)(ii), (c), (d)(i), (d)(ii) and (f).

While the lack of technical knowledge has been raised in previous reports analytical skills have not been given as much prominence before. Centres should consider methods to improve candidates' performance in this area.

(a), (b), (i), (f)(i), (f)(ii)

There is a close relationship between the specification points candidates are required to produce for the examination and those that are required as part of the coursework. Centres might consider adopting the format of the examination, i.e. a point followed by a reason, as a method of writing the specification for the coursework. This should establish candidate familiarity with the requirement to give a point and providing an associated linked reason for the point. Centres that adopt this suggestion should take note of the greater range of essential criteria detailed in the specification compared to the coursework requirements.

A possible method of improving candidates performance in parts (a) and (f) would be for centres to show candidates examples of existing graphic products and get them to write specification points for these objects. The specification points and reasons should cover the criteria listed in the specification. In connection with this task candidates could ask themselves, or each other, questions about why the example is designed or manufactured in a particular way.

A small number of candidates ignored the context of packaging for the specification points they gave. This enforces the need for candidates to read questions carefully.

(b)(ii) & (d)(i)

As has been identified elsewhere some candidates are becoming increasingly familiar, probably through good teaching, with the major technical processes associated with the manufacture of graphic products.

(c)

The limitations of properties that relate to physical attributes of a material have been used in previous year's examinations but still a number of candidates fail to respond to this. Physical properties are those that are intrinsic to a material, such as its hardness. They are not properties

influenced by factors such as economics, e.g. low cost or the viability of recycling.

(d)(ii)

Only the more able candidates recognise the limitations and problems associated with injection moulding. This lack of awareness of the problems related to processes has occurred in previous years as well as this year.

A possible structure for candidates to make revision notes about processes would be to cover the areas of; description, uses, advantages and disadvantages. This is a slight extension to the format used in the Heinemann revision books.

A similar structure could be used for candidates to make notes about materials; Significant properties (i.e. those specific to the material not those that could be applied to the whole family of materials), uses, advantages and disadvantages.

Question 2

(a)(i)

This question was very poorly answered by the majority of candidates. This is surprising as it was envisaged the using PVA to glue together pine would have been a question key stage 3 students would have been able to answer

(a)(ii)

This area of the specification covered by this topic was poorly understood by the majority of candidates.

(b)

Most candidates were familiar with the use of cutting mats and scalpels and could therefore provide valid answers scoring both marks.

(c)(i)

There were a wide range of responses to this question. Only the more able candidates gained both marks by providing the linked second part to the answer.

(c)(ii)

This area of the specification covered by this topic was poorly understood by the majority of candidates. It might be useful for centres to deliver a "taught lesson" to candidates that covers the seven glues listed in the specification. Notes that cover similar topics to those as that suggested for materials i.e., description, uses, advantages and disadvantages may be useful.

(d)

Most candidates were able to logically deduce an answer to this question.

(e)

The question was well answered by the majority of candidates. A small number of candidates gave answers relating to cost, even though this was excluded by the wording of the question. Again this emphasises the need for candidates to read the questions carefully.

(f)

A significant number of candidates provided answers linked to the generic advantages of CAD instead of linked their answers directly to a comparison between virtual and physical models.

(g)

A significant number of candidates provided answers linked to the generic advantages of using ICT instead of the specific focus for the question, that of managing data.

(h)

This area of the specification covered by this topic was poorly understood by the majority of candidates.

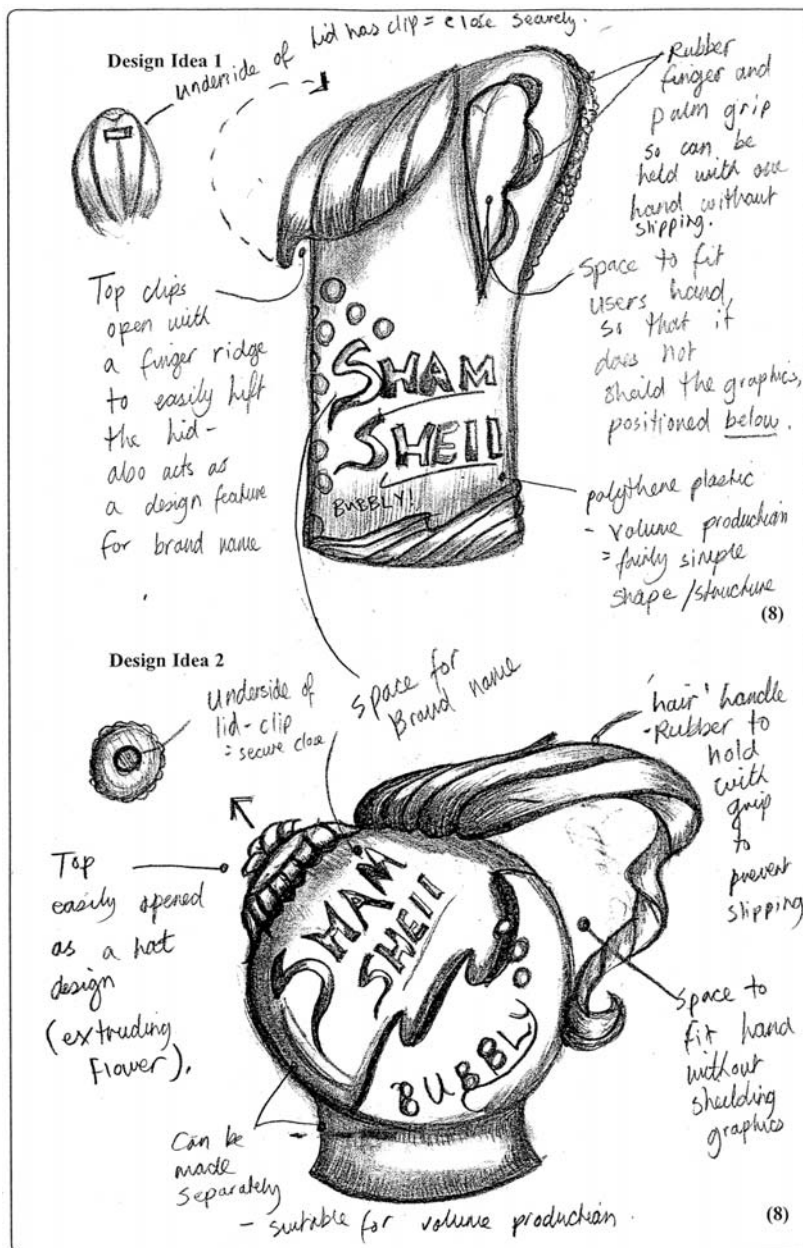
(i)

There were many well structured and reasoned answers to this question. This would tend to suggest that is CAM is both an area candidates are familiar with and they have been taught how to answer questions on the subject. Some candidates ignored the focus of the question being related to production of objects and gave generic answers relating to the use of CAD for design.

Question 3

The comments that were made for the foundation tier apply equally to the higher tier. A problem that was more evident on the higher tier than the foundation tier was one of candidates giving excessive focus to producing high quality drawings and failing to provide evidence that their designs meet the eight marking points of the specification.

This is illustrated by the image below



While the presentation of both design ideas is of a high quality the second design idea shares features with the first idea, and therefore fails to the relevant marks.

Question 4

(a)

There were a full range of answers to this question.

(b)

Many candidates were not familiar with both of the materials the question was about. When the question asks candidates to compare two materials the complexity increases. This type of question is useful to discriminate the higher ability candidates.

(c)

A small percentage of candidates ignored the aesthetic focus of the question and gave answers related to cost or speed. Again this reinforces the need for candidates to carefully read questions.

(d)

While most candidates appear to be familiar with the properties of MDF fewer were able to compare MDF to pine. Answers that were commonly given incorrectly related to strength, weight and cost.

(e)

This question comes from the area of the specification that covers new and smart materials. As has been the case in previous years this is an area where few candidates had the knowledge required to answer the question. As there are only four new materials listed in this part of the specification it might be appropriate for centres to spend at least a single lesson outlining the main properties and application of these new materials.

(f)

A small number of candidates gave advantages instead of disadvantages. Again this reinforces the need for candidates to carefully read questions.

(g)(i)

A small percentage of candidates ignored the workforce focus of the question and gave answers related to CAD/CAM in general terms.

(g)(ii)

Again a number of candidates ignored the cost focus of the question and gave answers related to CAD/CAM in general terms.

Centres should be aware that the CAD/CAM appears several times in the specification with the emphasis placed on different aspects of the utilisation of the technique. The focus in AO1C is how CAD/CAM enables faster more flexible manufacturing. The focus in AO3 relates to the cost of production. The specification details which assessment objectives are tested in each question.

**GCSE Design and Technology: Graphic Products
Principal Moderator's Report
Unit 1972, Coursework**

Introduction

This specification has now been examined since summer 2003 and centres are clearly becoming aware of its demands and requirements. There were no significant issues with centres producing work that is inappropriate for this level, or this specification. Most candidates understand the need to evidence 2D and 3D design work in both portfolio and making. Although there are obviously some exceptions to the rule.

The majority of work submitted for this part of the course was focused on the assessment criteria, appropriately presented on 18-25 sides of A3 and structured to represent the demand required at KS4. The majority of centres understand the requirements of a Graphic Product and the necessity to ensure the outcome has both 2D and 3D elements. More teachers than in previous years understand the marking criteria and have marked candidates in line with Edexcel's standard.

Administration

Many centres were able to follow the administration procedures without too many problems. However, the moderation team did raise the following issues after this year's moderation.

Addition errors are again common amongst the samples sent to the moderators. It is essential that centres check the marks entered on the CMRB's carefully in order that candidates are not disadvantaged. It is also important to ensure that marks are clearly identified on the CMRBs in order that the total can be checked. It is possible (and it has happened) for three different marks to be listed for an individual candidate. This has shown itself through, one written on the CMRB, a set of marks on the CMRB that add up differently to the total written and a different one on the OPTEMS form. It is essential that these marks match, and can cause considerable additional paperwork for centre and moderator.

In most cases the centres submitted coursework appropriately bound and in the required format. However, there was a significant increase of centres that did not clearly label the individual candidates' work depending only upon the attaching of the CMRB to the front cover of each candidate. This is extremely difficult for the moderator as it is necessary to detach the CMRB prior to processing, if there is then no other means of identifying the project folder it then causes a considerable delay to the moderation process.

Some candidates failed to number pages within the project. It is useful if the page numbers are added, especially where centre annotation refers to page

numbers. Centre annotation was in main informative, and was often very useful to the moderator. It can give clear indication of the reasons for the allocation of teacher marks.

A number of centres had to be contacted to forward further samples of projects, having only sent the projects indicated on the OPTEM form. **Where the OPTEM's fails to select the top and bottom candidate, they should always be added to the sample to be sent to the moderator.**

Project Selection

The key to success in this part of the GCSE examination is in the guidance given by the teacher to the candidates in the choice of coursework they are to undertake. Here we have seen an improvement in candidate performance. More centres are giving informed guidance to candidates to ensure that they access the full mark range. It is clearly important that the teacher who knows the individual students should decide on the best approach for project choice differentiating according to any combination of ability, interest, experience or facilities within the centre. The selection of projects by teachers through the use of 'class directed projects' has this year led to a very formulaic approach to the coursework submission. One or two centres had clearly set the design brief, in so much that all candidates had an identical 'word for word' statement of Needs. In these instances of over direction by the teacher the candidates cannot be awarded the marks as the teacher has clearly given them the statement. Where class projects were most effective the candidates have used a theme to develop an individual problem and justified their target group from their own point of view.

Candidates must tackle a problem that enables them to design and make a product that includes both a 3D as well as a 2D element. It is apparent that a decreasing number of centres still have not recognized this. Where centres have submitted both elements as part of their final product, they have often offered no evidence of the design of the 2D element within the design portfolio. The lack of design evidence for a 2D or 3D element would lead to a restriction in the marks available in the ideas and development sections. Similarly a lack of one or other of these elements would also lead to a restriction of marks available in the select and use and making sections. Where candidates have found some difficulty incorporating the 2D or 3D element, the topics have included; CD covers, corporate stationery, menus, posters, designs for t-shirts/clothes, comics, books and maps which allow very little development into the 3D requirement of the examination. Architectural design, playground designs and restaurant designs need to be developed fully to allow adequate coverage of the 2D requirement.

It is also important to ensure that the project selected for the coursework element is appropriate to the level of demand. Simplistic KS3 type projects do not allow candidates to access the full range of marks available for the coursework. The medium and high mark levels (for "Ideas," "Develop," "Select and Use," and "Make product") cannot be awarded in projects that

lack the level of demand for KS4. This links in to my previous comments about the differentiation, where limited ability candidates may benefit from the more structured approach of a 'set' low demand project. Yet the higher ability candidate may need the freedom to explore the more demanding open-ended projects in order to access the full range of marks available.

The remainder of this report will focus on the individual assessment criteria as listed in the CMRB.

Needs

Where centres gave candidates a design brief either individually or as a group brief, it was unusual to see any justification of need for the problem, or indeed any connection to a user or market group. Justification of a need with reference to the market group and the production of a detailed brief is needed for the high mark category. The completion of a 'fill in the blanks approach' often led to underachievement as the candidates tended to fail to take ownership of their own work, therefore failing to understand the real issues in the design work to be tackled.

Information

Centres again on the whole, assessed this section very well. It should be noted that to achieve the higher level assessment category; more than two sources of research are required and the research needs to be related to the needs and used to inform decisions.

Specification

It is expected that the specification refers to the 2D as well as the 3D element of the problem. Where the specification is lacking it builds in an inherent weakness in the candidates' ability to compare their design ideas to the specification, and to test and evaluate the end product effectively. Candidates commonly offered only simple statements as specification points, failing to give reasons for their inclusion. In general the specifications were assessed accurately, where there were discrepancies in teacher assessments it was usually because of a lack of justified budgetary constraint at the higher mark level. A simple statement of an amount to be adhered to is not enough for the maximum mark. The amount must be justified within the problem context.

Ideas

This section of the marking scheme was generally well completed by both teachers and students. A wide range of work evidenced. Some centres follow a template approach whereby all candidates produce 6 ideas followed by 6

developments. This helped lower ability candidates but may have limited the better ones. There was little evidence reported by moderators of candidates exploring different aspects of ideas; they tended to produce more of the same style ideas that lacked depth. Where evidence of 2D and 3D designs was offered, candidates performed well. It was, however, disappointing to note that some able candidates failed to achieve their potential due to an ignorance of the 2D or 3D requirement in this section.

Develop

It is disappointing to note that many centres still did not use this section to take designs on towards a final solution. All too often candidates produce a clear initial design section and settle on one of those ideas as a final solution. Consequently showing no changes to the design, no modeling or testing of the design changes to establish a suitable solution. In general this section was often over marked by centres often due to a lack of consideration to the 2D element, lack of material or construction process, or a lack of modeling, or simply no change incorporated into the design work. It is appropriate at this stage to use CAD as a form of modeling and communication of changes from the initial ideas. A final proposed solution must be evidenced at some point at the end of the development section, this could be a working drawing or pictorial view as appropriate. However, it must document the 2D and 3D elements to be constructed.

Review

It is vital that the design work is reviewed against the specification rather than candidates submitting unjustified or unsupported comments about their own point of view. Frequently centres awarded high marks for the volume of comments, even if they were not linked to the specification.

Written Communication

Again this assessment criteria was assessed accurately by centres. Centre should encourage the more able candidates to use specialist vocabulary in order to access the higher level. It is not sufficient to just spell simple statements correctly, a level of demand is required in this as in other areas.

Other Media

Here also candidates performed well. Graphic students tended to use a wide variety of graphical skills in the presentation of their coursework; there was sufficient evidence of the use of other media to suggest that candidates were being taught a wide range of presentation techniques. It is important to make sure that photographic evidence of model making is presented in the folder if the models are not appropriate for insertion to the folder itself. It should be noted also here that the insertion of material samples are not to be

encouraged, as this serves only to bulk up projects. If tests are undertaken on samples, they should be photographed and submitted as part of the development section.

ICT

The use of ICT varied greatly from centres where the only evidence was word processing to centres that presented the whole project as an A3 printed document including scanned drawings and sketches, digital photographs, graphs, charts, tables etc. However, centres were accurate on their assessment. It should be noted that expensive CAD packages are not necessary to achieve the high category in this section. This at its simplest level could of course be the use of Word in the development of more than one aspect of the 2D element.

Systems and Control

There is clear evidence that centres still do not understand the requirements of this section of the mark scheme. It was by far the most common area in need of adjustment. It was unusual for candidates to achieve the high category in this section. It states clearly in the assessment criteria that; the use of a systems diagram is required, for the whole or one aspect /part of the manufacturing process. In addition to achieve the high category candidates must indicate the Input, Process and Output boxes and demonstrate the appropriate use of feedback in the use of performance checks. **It was the lack of the labeling of the Input - Output boxes that caused most problems.** It is also not sufficient to offer lists of activities in a table with Input - Output columns. Most centres offered a recognizable drawn flow chart with feedback boxes appropriately sited, and achieved a medium mark.

Schedule

Again candidates failed to offer the detail required to make their proposal, or failed to link the plan to time. Quality control is also required at the higher level scoring. Retrospective time plans are not admissible as planning tools, it is obviously necessary to prepare the plan in advance of the making activity. Careful planning charts can gain a number of credits if a variety of information is included in them. Sometimes systems and control work can be gained as well as planning, at others select and use information can be documented. Where evidence of planning can be seen in the systems and control section, this will be credited.

Industrial Applications

This assessment category was quite often under-marked, often being adjusted to the high category. Where candidates have documented the use of a manufacturing process that is recognizable as a technique used in industry

then candidate has achieved the high category. Processes often being overlooked are; vacuum forming, encapsulation, use of a vinyl cutter, line bending with a jig, drilling with a jig, blow moulding and laser cutting. The use of various school based CAM output devices are acceptable industrial techniques as are the use of some CAD packages in the production of the 2D element. Where candidates only document the possibility of using these techniques rather than actually using them they are entitled to either low or medium in this category.

Select and Use

This year most candidates provided better evidence of 'select and use' in order to access the higher marks. In order to achieve the high mark category in the assessment criteria candidates need firstly to have produced a product that has a 3D element as well as a 2D element. Consideration must be given to the selection and use of tools and equipment in the production of **both** elements. The documentation of the selection of these tools/processes, is usually shown in the schedule, or flowchart offered in the systems and control section. The demonstration of the skilful use of these tools can be ascertained from photographs in the CMRB or throughout the portfolio itself. In some cases the only evidence available was in the photograph and only the lower marks were accessible. The candidates must also document the selection of those tools and processes in the portfolio, and demonstrate the use of them to a high degree of skill. Where the schedule was offered in the form of a Gantt chart, without any referral to actual work undertaken or diary notes. Selection of tools/materials, making processes, safety and quality control were often omitted at this stage and candidates significantly underachieved.

Making

As the quality of manufacture has already been allocated marks in the select and use section, this section is focused on the accuracy of manufacture in relation to the final proposal. As in previous years, too many centres seemed to justify the marks allocated in this section to a quality product, rather than crediting the candidate for accurately making a product that matches the proposal suggested at the end of the develop section. Naturally where candidates failed to offer any final proposal, either in working drawings or other graphical proposals without accurate measurements or reference to scale it was difficult to justify high marks. In the highest assessment category candidates must demonstrate that the manufactured product meets the proposed solution and its features relate fully to those intended in the design work. Naturally modifications can be made during manufacture, but reference would normally be made to these at an appropriate point. There was a slight improvement of the quality of working drawings when candidates offered them.

Work Safely

A significant number of centres continued to mark this section of the assessment criteria inaccurately. Where there is no evidence in the portfolio of consideration of safe working practices, teacher observation is acceptable for a low category mark only. Anything else requires documentary evidence in the portfolio, either as photographs of the candidate in using key processes or in the highlighting of safety considerations through the planning or flowchart.

Test and Checks

Many centres failed to address this section with the same degree of thoroughness as other sections. In some cases the marks given by centres reflected this, but many did not. There needs to be evidence of the candidates devising tests that can be applied to their products that can be used to assess whether the specification has been met through the final product. Evidence of using these tests, usually through the use of photographs, is needed to achieve the high mark category. Obviously in producing a specification it is necessary to be aware of the need to produce measurable indicators for some if not all of the specification points. Candidates need to consider how they will easily assess their end products when completing the specification, in order to highlight the issues they will face later.

Evaluate

Most candidates were accurately assessed for this assessment criterion. The very best cases candidates used the previously acquired test results in the evaluative commentary produced here but the main aspect missing from the majority of evaluations was again the lack of justification or objective support given to comments being made. It is not good enough just to offer an opinion, it needs to be backed with reason and be connected to the testing having taken place previously.

Modifications

This final section was much improved on previous years. Centres marked accurately and obviously felt confident about the application of the marking criteria. Where candidates achieved the high category they offered changes (more than one) that connected to the results of tests and appear from suggestions in the evaluation. Sketches were the commonest method of communication here, some candidates even modeling the changes either through ICT or in 3D models.

GCSE Design and Technology: Graphic Products
Unit 3972, Foundation Tier
Unit 3972, Higher Tier
Unit 3972, Coursework

Introduction

The low number of entries for the short course makes it difficult to provide comments on the performance of the candidates. However, the comments made on the full course common questions or elements are relevant and helpful for the short course and should be read in conjunction with any general comments provided below.

General comments: Coursework

The comments made in last years' report would appear to have been taken on board by the small number of centres opting for this specification. The marks given by centres were very largely in line with Edexcel's standard and required little in the way of adjustment.

Many projects were:

- well focused on the required project activity
- presented on 14-20 sides of A4
- structured to an appropriate level for this examination
- realistic problems for graphic products
- had a 2D and 3D outcome

It needs to be remembered that the short course project should be completed in around 20 hours. There was evidence of a minority of centres exceeding this, offering projects that are too involved for the short course or going into too much depth.

A significant minority of submissions was poorly bound; centres sending poorly labelled and too loosely bound sheets in individual candidate submissions. It should be noted that it is not acceptable to merely attach a CMRB to the front of each individual coursework portfolio, without including a clear label on the front cover, or preferably each sheet contained within. The CMRB's are removed at an early stage and bound separately, leaving some portfolios unlabelled and difficult to administer.

Information

This was an accurately marked area of the assessment criteria, with candidates often failing to individualise their research. This is a common issue with centre set projects. The candidates need to use this research in the compilation of a specification later.

Specification

This area was often adjusted as the candidates had failed to justify their specification points, often offering a common list where set class projects had been undertaken. Budgetary constraints was also overlooked, candidates must give reasons for the amount being suggested.

Ideas

This section was generally well marked and little adjustment was required. However, where there was a need to adjust it was because of a lack of design work for both 2D and 3D elements. Where evidence of 2D and 3D designs were offered candidates performed well.

Develop

In general this section was often over marked by centres often due to a lack of consideration to the 2D element, lack of material or construction process, or a lack of modelling, or simply no change incorporated into the design work. This was certainly the weakest area of this examination. The inclusion of CAD work is sought here, this can range from the simple development of a logo (2D element) on Word or sophisticated software specifically designed for specific CAD purposes. Evaluation and technical input is also welcome here, but not a series of instructions for the assembly of the final piece.

Written Communication

This assessment criteria was well marked and rarely required adjustment.

Other Media & ICT

This assessment criteria was well marked and rarely required adjustment.

Systems and Control

There is clear evidence that centres still do not understand the requirements of this section of the mark scheme. A flow chart documenting the manufacture part or all of the product is required. It should be **labelled** input, process, output, and have relevant feedback loops. The most common mistake is a failure to label the diagram at all and it clearly states in the assessment criteria that the diagram must be labelled.

Industrial Applications

This assessment category was quite often under-marked, often being adjusted to the high category. Where candidates have documented the use of a manufacturing process that is recognisable as a technique used in industry then candidate has achieved the high category. Processes often being over looked are; vacuum forming, encapsulation, use of a vinyl cutter, line bending with a jig, drilling with a jig, blow moulding and laser cutting

Select and Use

This area was generally well marked, most centres recognising the need to document/evidence the selection of tools and processes used in manufacture and the quality application of those processes and tools. Where centres were adjusted it tended to be because they had failed to evidence a 2 or 3D element, either in the entire manufacture process or in their documentation.

Make Products

This was also well marked by many centres, although some still do not relate the final product to a documented intended outcome in the folder. Here we are looking to check the final outcome for accuracy against the intended product designed within the folder. If there is no suggested final product in the folder, in the form of a working drawing, pictorial proposal, or even indicated sketch in the development, of both 2D and 3D elements, then the centre was invariably generous in this section.

Tests and Checks

Many centres failed to address this section with the same degree of thoroughness as other sections. In most cases however, the marks given by centres reflected this. There needs to be evidence of the candidates devising tests that can be applied to their products that can be used to assess whether the specification has been met through the final product. Evidence of using these tests, usually through the use of photographs, is needed to achieve the high mark category.

Evaluate Product

The marks in this section were accurately applied. It was common to see only 1 or 2 marks allocated by centres as the candidates had only treated this section superficially, usually due to a lack of time or planning after the manufacture of the final product. It is also important to note; that the lack of a thorough specification at the start made things more difficult for those candidates in this section.

**GCSE Design & Technology: Graphic Products
(Full Course: 1972)**

Grade Boundaries - Summer 2006

Overall Grades

The figures given below are the minimum subject marks required for each overall grade in the summer 2006 examinations.

(Foundation Tier out of 100)

C	D	E	F	G
56	45	35	25	15

(Higher Tier out of 100)

A*	A	B	C	D	E
81	70	59	49	40	35

Component Marks

The figures given below are the minimum marks required for each component grade in the summer 2006 examination.

(Coursework 01 out of 102)

A*	A	B	C	D	E	F	G
92	80	68	56	45	34	23	12

(Paper 2F out of 88)

C	D	E	F	G
57	46	36	26	16

(Paper 2H out of 88)

A*	A	B	C	D	E
64	54	44	35	29	26

**GCSE Design & Technology: Graphic Products
(Short Course: 3972)**

Grade Boundaries - Summer 2006

Overall Grades

The figures given below are the minimum subject marks required for each overall grade in the summer 2006 examinations.

(Foundation Tier out of 100)

C	D	E	F	G
54	44	34	24	14

(Higher Tier out of 100)

A*	A	B	C	D	E
79	68	57	47	37	32

Component Marks

The figures given below are the minimum marks required for each component grade in the summer 2006 examination.

(Coursework 01 out of 84)

A*	A	B	C	D	E	F	G
76	66	56	46	37	28	19	10

(Paper 2F out of 44)

C	D	E	F	G
27	22	17	12	7

(Paper 2H out of 44)

A*	A	B	C	D	E
30	25	20	16	12	10

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