

GCSE

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Design & Technology

Graphic Products (1972, 3972)

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Examiners' Report

Edexcel GCSE
Design & Technology
Graphic Products (1972, 3972)

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

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 target areas where improvements to results can be made next year.

The structure and format of the exam was the same as last years.

Overview

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

The time allocated for the paper was appropriate. The majority of candidates attempted all questions. There were no indications that candidates lacked the time needed to complete the paper.

Weaknesses

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

1. The poor evaluation of the design ideas for both tiers of entry.
2. For foundation candidates the lack of full answers to the two part describe and explain type questions
3. For higher tier candidates the lack of subject specific knowledge.

Evidence suggests that candidates could be prepared by the centres for the examination. Candidates performance in some sections of the examination, in particular those questions covering AO1, was poor. This should be addressed by centres.

The structure of the syllabus awards 60% of the marks to coursework and 40% of the marks to the final written examination. On the evidence of this year's examination it would appear that centres have concentrated their efforts and their candidate's time on the coursework element. This may have impinged on teaching candidates the knowledge and understanding required to be successful in the examination.

Given that 40 hours is the recommended time to complete coursework it follows that approximately 27 hours should be allocated to teaching the knowledge and understanding of the content listed in the specification.

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

1. Knowledge that may be taught during KS3 technology - eg the properties of MDF
2. Knowledge that may be taught in other subjects - eg recycling
3. Knowledge that is specific to graphic products - eg commercial printing processes.

It is the last type of knowledge, specific to 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 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. Candidates entered in the foundation tier most 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 ie 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"

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 give new information additional to that credited in the design section.

Examples of appropriate evaluations are;

Foundation

- *The stand must not fall over when displaying the front cover of the book.*

The stand leans backwards but it cannot fall over because of the supports that fold out. The front of the book has nothing in front of it so it allows someone to see it.

- *The stand must hold the book in place and allow the book to be removed.*

Because the stand leans backwards gravity will keep the book in place. The edges of the stand stop it moving sideways. The book is easy to remove because there is a gap at each side where fingers can fit.

- *The stand must be easily made as a one-off product.*

The stand is easy to make because it is a simple design. It only has 3 bits of card. It is made using a scalpel which does not need a lot of skill and lots of people know how to use it.

Higher

- *The gift box must hold the 3 bottles separately and allow them to be easily removed.*

The box has a vacuum formed tray with 3 compartments, between each compartment is a big bit of plastic. This keeps the bottles apart. To get the bottles out you only have to pull them forward or up with your fingers.

- *The gift box must be easy to open and close securely*

To open the box you just pull the flap on the lid. You don't have to undo any thing. The magnets will keep the lid secure depending on how strong they are, strong will magnets mean a secure closing.

- *The gift box must be easily suitable for volume production*

The gift box will only be made from 2 parts so it will not be hard to assemble. Card is a common material to make boxes from so there should be lots of companies that can make it.

In summary there are three main areas where centres could considerably improve the performance of their candidates.

1. The evaluation of the design ideas for both tiers of entry.
2. Full answers to the two part describe and explain type questions for foundation candidates
3. Subject specific knowledge for higher tier candidates.

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

Foundation Tier (Paper 2F)

Question 1

a

The majority of candidates scored correctly identifying the cutting mat and glue stick and their use. The vacuum former and vinyl cutter were correctly identified commonly by those candidates achieving c/d grades. The hot wire cutter was frequently not recognised. Centres would benefit from examining the specification to identify the tools, components and equipment that could be shown in this question. Once they are identified candidates could be shown the variety of designs types available from a range of manufacturers.

b

The most common correct answer was that the glue would set quicker. The most common incorrect answer was that the glue was stronger.

c

It was surprising how few candidates correctly answered this question. Approximately 20% of candidates gained 1 mark and only 10% gained both marks. The most common glue given for pine was contact adhesive.

d

This question was not well answered by the majority of candidates. Candidates achieving c/d grades often only scored 1 mark for indicating mixing as part of the preparation.

e

CAD was a topic that most candidates had some familiarity with. Most candidates gained at least 1 mark from this question.

f

Most candidates gained at least 1 mark from this question. Very few candidates gained full marks. This was due to answers missing the second linked point.

Question 2

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

a

Most e grade and above candidates scored at least 1 mark for this question. Common reasons for candidates not scoring marks were;

1. Repeating one statement twice using different words, eg Cartridge paper is thicker, Layout paper is thinner.
2. Identifying one of the types of paper as paper with printed lines on it eg isometric grid paper.

b(i)

Most e grade and above candidates scored the mark for this question.

b(ii)

Most c/d candidates gained at least 1 mark from this question. Few candidates gained full marks. This was due to the answers missing the second linked point.

c(i)

This question was typically answered correctly by C grade candidates. The main reason for candidates failing to gain the marks was a lack of technical knowledge. Some candidates gave answers that related to manufacturing the blister pack backing. The wording of the question was very similar to a question in the 2004 examination. Centres would benefit from familiarising candidates with the wording and structure of questions from previous examinations. This may help candidates understand how they can best structure a response to different types of question.

c(ii)

Very few candidates possessed the knowledge required to answer this question.

d

Few candidates correctly answered this question. Candidates frequently related their answer not to the mould but to the pen holder itself.

e and f

These questions elicited a wide range of answers from candidates. The most common reason for candidates failing to gain marks was for them to give advantages, not disadvantages and vice versa. Centres would be advised to reinforce the need for candidates to carefully read the question. Centres could easily produce their own practice examination questions by simply changing previous examination questions from give advantages to give disadvantages and vice versa. A candidate that practices answering a number of questions that alternately ask for advantages, then disadvantages, may be less likely to give the incorrect answer in the real examination.

g

This question was typically correctly answered by C grade candidates.

h

Most c/d candidates gained at least 2 marks from this question. Few candidates gained full marks. This was due to the answers missing the second linked point.

Question 3

This question gained a full range of responses from candidates. Typically, design idea 1 scored the most marks, then design idea 2 with the evaluation scoring the least.

(a)

The biggest factor preventing candidates scoring full marks for the design ideas was a lack of explicit information. Candidates added notes indicating that their design achieved a specification point but there would be no drawings, or notes, that showed how this was achieved. Explicit evidence is required to gain the marks available. Those candidates that did gain good marks often used multiple views of the design and notes to explain the drawing. This may be a technique that centres encourage candidates to practice.

The second factor that prevented candidates scoring higher marks was that design idea 2 was too similar to design idea 1 or that parts of the design were exactly the same. For example candidates would often suggest that the stand for both ideas 1 and 2 could be made from card. When this occurred only the first occurrence would gain credit.

Candidates would benefit from identifying two technically different solutions to the problem before they start drawing. As well as the form of the product, suitable materials and manufacturing methods should be considered. This would make it easier to gain marks in the second design idea.

A significant number of candidates failed to indicate a space to display promotional graphics. This would have been the easiest specification point for candidates to gain marks from. As this point has appeared on previous design questions it is surprising how frequently candidates failed to score any marks for it. Centres would benefit from creating their own design type questions for candidates to practice examination techniques on. The published mark schemes will assist teachers in producing their own mark schemes that guide candidates towards good practice.

(b)

The evaluation was poorly done by the majority of candidates. Instead of making comments that judged the quality of the design ideas, candidates often gave simple answers such as "yes my design is easy to make as a one-off product".

Previous sections of this report provide examples of appropriate evaluation answers.

Last years report contained the paragraph below;

"Evaluation of the design ideas will be present in the exam for the lifetime of the syllabus. The principle examiner believes this is an area of the examination where centres could make the biggest improvements to candidate's scores with the least demand on teaching time. It should be possible for centres to teach candidates a technique that would allow them to evaluate any design idea in such a way as to score high marks. This section of the paper contributes almost 7% to the overall mark, therefore it has the potential to make a significant impact to the candidates overall mark"

On the evidence of this year's examination most centres have not responded to the suggestion. Those centres that address this issue are likely to see significant improvement in candidate's performance, for a small investment in time.

A significant number of candidates confused one-off products as being products that would only hold one specific book, not being manufactured as a single product.

Question 4

There were a full range of responses to most parts of this question.

a

In this part of the question nearly all candidates managed to score at least 1 mark. This was normally awarded for giving a valid point for the specification but often the candidate failed to gain the second mark for the reason. A common cause for not gaining the mark for the reason was the candidate would repeat the specification point again using different words, not adding any new justification as a reason. Most candidates scored between 2 and 4 marks.

The most common point where candidates failed to score marks was that related to environmental.

b

Most candidates scored 1 mark for indicating that being flexible allowed to case to open and close. Most candidates failed to gain the mark for a linked second point.

c

The most common correct answers related to not paying employees and not buying machinery. These answers were given by C grade candidates typically.

d

Few candidates scored full marks for this question. This was due to a combination of a lack of technical knowledge and answers that lacked the second linked point.

e(i)

Most candidates gained full marks for this question. The most common incorrect answer was for candidates to describe a test, instead of simply naming two parts.

e(ii)

Most c/d grade candidates gained 1 mark from this question. Only the good C grade candidates scored the second linked mark.

f

Most candidates gained 1 mark per part from this question. Very few candidates gained the linked second mark.

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

Question 1

This question is the same as question 4 on the foundation tier. In comparison candidates on the higher tier typically scored 50% more than foundation tier candidates.

a

Most candidates scored between 3 and 5 marks for this question. The most common reason for candidates not gaining marks was to repeat the point given for the environmental criteria. Candidates would give answers such as "the case should be made of a recyclable plastic", but then the reason "so it can be reused" which does not give any new information.

b

Most candidates score 1 mark for indicating that being flexible allowed the case to open and close. Most candidates failed to gain the second mark for a linked second point.

c

See foundation comments

d

Candidates tended to score 2 marks by giving information about injection moulding but failing to link the comment to the case.

e(i)

See foundation comments

e(ii)

Most candidates gained 2 marks from this question. The most common valid answer related to checking for sharp edges so the user did not cut themselves.

f

Most candidates gained 1 mark per part from this question. Typically only B grade and above candidates would gain both second linked marks.

Question 2

This question highlighted the lack of technical knowledge amongst the majority of candidates. Some of the more able candidates used the wording of the question to guess partially correct answers, but this only allowed them to gain partial marks.

a

The reasons for applying varnish were well understood by the majority of candidates.

b

Embossing was a process few candidates were able to describe. Some candidates appear to have deduced that pressure would be required to raise a section of the card, but their answers lacked the detail of how pressure would achieve the transformation. The most common incorrect answers related to applying additional layers of card.

c

The gravure and lithographic printing processes have both appeared in previous examinations. It was anticipated that this would have led to this question being more accessible. Very few candidates demonstrated appropriate levels of awareness of these commercial printing processes. This highlights the need for candidates to be taught subject specific knowledge. A candidate that may be gaining A*'s across all subject areas will be unable to answer these type of questions without being taught the content of the specification.

d

Die cutting and folding was a process few candidates were familiar with. Some candidates appear to have deduced that a combined process (of any type) would probably be quicker than two individual processes. A significant number of candidates misunderstood the word die to mean changing the colour of the card.

e

Questions about lay planning have appeared in previous examinations. It should be a relatively simple concept for candidates to understand. It was therefore surprising the number of candidates that failed to gain marks for this question. Again this indicated that the majority of candidates lacked the level of subject specific technical knowledge required to gain high marks from the exam.

f

The advantages of CNC equipment were well understood by the majority of candidates. The most common reason for candidates failing to gain marks was repeating the same information using different words, eg CNC equipment produces more accurate components, and CNC equipment produces components with less variation.

g & h

Candidates gave a wide range of both valid and invalid answers to these questions.

(i)

There were a wide range of styles of answer to this question. Sometimes the level of candidate response to this question was significantly better than previous questions. It may be that these candidates had followed a business studies option.

Question 3

a

This question gained a full range of responses from candidates. Typically candidates scored between 8 and 12 marks on the question. Candidates gained marks in the same pattern as the foundation tier candidates ie Design idea 1 scored the most marks, then design idea 2, with the evaluation scoring the least. The most common reason for the second idea scoring fewer marks than the first was repetition of information.

Most candidates produced designs that successfully held the bottles separately. The majority of candidates failed to explicitly indicate a method whereby the bottle was easy to remove.

The majority of candidates gained both marks for the box being able to open and close securely.

A significant number of candidates either failed to indicate any position for graphics, or failed to take into account the requirement that the graphics had to be on the inside of the box. This may indicate that candidates need more guidance or practice in reading this type of question accurately.

Approximately 50% of candidates indicated a form or method of manufacture that was suitable for volume production. A slightly greater percentage gained the mark for indicating a suitable material.

b

Most candidates scored poorly in this section. They typically gained 1 mark from each of the first two specification points.

Question 4

The majority of candidates performed well in this question. Part of the reason for the success of candidates may be due to their familiarity with the subjects of the questions. For example candidates may be familiar with the advantages of PET compared to glass through their consumption of drinks, not through subject taught knowledge.

a

This question gained a full range of responses from candidates.

b

This question was well answered by the majority of candidates.

c

This question gained a full range of responses from candidates.

d

This question gained a full range of responses from candidates. The most common reason for candidates failing to score full marks was the lack of the second linked part of the answer.

e & f

These questions were well answered by the majority of candidates.

g

This question gained a full range of responses from candidates. The most common reason for candidates failing to score full marks was the lack of the second linked part of the answer.

h

This question gained a full range of responses from candidates. The most common reason for candidates failing to score full marks was the lack of the second linked part of the answer.

(i)

This concept was well understood by the majority of candidates. The most common reason for candidates failing to score full marks was the lack of the second linked part of the answer.

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 principle examiners 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.

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

Introduction.

As this examination beds in, it is evident that centres have taken on board the guidance offered by EDEXCEL at INSET, and comments made through the Principal moderator in last years report in greater numbers than previous years. 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.

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 the boards' 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 CMRB's in order that the total can be checked. In some cases centres did not submit the same marks on the CMRB as were shown on the OPTEMS, it is essential that these marks match, if this is not the case it can cause considerable additional paperwork for the 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 attachment of the CMRB to the front cover of each candidates work. 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 candidates should decide on the best approach for project choice, differentiating according to any combination of; ability, interest, experience or facilities within the centre. However there are a number of aspects that the chosen intended project will lead to a satisfactory outcome.

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 minority of centres still have not recognised 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.

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 (which moderators report, are on the decrease) rarely allowed candidates to access the full range of marks available for the coursework. It is more difficult to justify the medium and high mark levels 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.

It is clear from this year's submission that most centres have taken careful note of last years report and we saw less projects of an inappropriate nature, although there were a small number of centres submitting work more suitable to resistant materials than graphic products. Where this occurred, the centres would be notified through the U9 report.

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.

Information

This section was on the whole, very well assessed by centres. 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. 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.

Ideas

This section of the marking scheme was generally well completed by both teachers and candidates. At the top medium to high end, candidates produced work of a very good quality, with candidates making good use of ICT facilities to present well displayed written and diagrammatic information. However, it should be noted that some centres rely a little too heavily on ICT and should encourage candidates to present more of their own graphical skills and techniques. Where evidence of 2D and 3D designs were offered, candidates performed well. It was however disappointing to note that some able candidates failed to achieve their potential due to a lack of knowledge of the 2D requirement.

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 modelling 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 or a lack of modelling and change incorporated into the design work. It is appropriate at this stage to use CAD as a form of modelling.

Review

This section was usually well assessed by centres and often ignored completely by candidates. 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.

Written Communication

Again this assessment criteria was usually assessed accurately by centres. Centres 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 candidates tended to use a wide variety of graphical skills in the presentation of their coursework. 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 develop section.

ICT

A wide range of appropriate ICT techniques were submitted. It should be noted that expensive CAD packages are not necessary to achieve the high category in this section. Use of ICT in the development of design solutions is necessary though. 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 labelling 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

recognisable drawn flow chart with feedback boxes appropriately sited, and achieved a medium mark.

Schedule

This section was poorly completed by many candidates this year. All too often 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. Where evidence of planning can be seen in the systems and control section, this will be credited.

Industrial Applications

The vast majority of centres again under-marked this section, 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 candidates can achieve the high category. 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. Other areas of acceptability are the use of machine tools such as vacuum former, blow moulding machine, milling machine or industrial modelling techniques. Where candidates only document the possibility of using these techniques rather than actually using, then they are entitled to either low or medium in this category.

Select and Use

Some centres still show no awareness of the requirements of this section, however the vast majority do. 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 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. 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.

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 last year, too many centres seem 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. It was remarkable the number of candidates offering no final proposal, merely depending upon a selected sketch in ideas or develop section. Moderators also noted a lack of quality working drawings with measurements, whether they be more formal orthographic or in other formats. Again evidence of the 2D and 3D elements are expected in this section.

Work Safely

This section of the assessment criteria was largely marked inaccurately in many centres. 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. Many centres allocated maximum marks to candidates who worked very safely, but did not evidence this in their portfolio,=. Indeed they were often photographed using equipment without goggles, or apron, or hair tied back, etc.

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 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.

Evaluate.

Most candidates were accurately assessed for this assessment criterion. In 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 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

In many cases it was apparent that the modifications offered here tended to be rushed afterthoughts at the end of a long project. Tiny sketches in the corner of a page of evaluated comments, added without any real attempt to offer a supported change, emanating from thoughtful, evaluation and testing. 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 modelling the changes either through ICT or in 3D models.

**GCSE Design and Technology: Graphic Products
Principal Examiner's Report
Unit 3972, Foundation Tier**

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 target areas where improvements to results can be made next year.

The structure and format of the exam was the same as last years.

Overview

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

The time allocated for the paper was appropriate. The majority of candidates attempted all questions. There were no indications that candidates lacked the time needed to complete the paper. In comparison with candidates on the full course, short course candidates performed marginally better in the examination.

Weaknesses

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

4. For foundation candidates the lack of full answers to the two part describe and explain type questions
5. For higher tier candidates the lack of subject specific knowledge.

Evidence suggests that candidates could be better prepared by centres for the examination. Candidates performance in some sections of the examination, in particular those questions covering AO1, was poor. This should be addressed by centres.

The structure of the syllabus awards 60% of the marks to coursework and 40% of the marks to the final written examination. On the evidence of this year's examination it would appear that centres have concentrated their efforts and their candidate's time on the coursework element. This may have impinged on teaching candidates the knowledge and understanding required to be successful in the examination.

Given that 20 hours is the recommended time to complete coursework it follows that approximately 14 hours should be allocated to teaching the knowledge and understanding of the content listed in the specification.

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

4. Knowledge that may be taught during KS3 technology - eg the properties of MDF.
5. Knowledge that may be taught in other subjects - eg recycling
6. Knowledge that is specific to graphic products - eg commercial printing processes.

It is the last type of knowledge, specific to 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 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. Candidates entered in the foundation tier most 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 ie 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"

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

Foundation Tier (Paper 2F)

Question 1

a

The majority of candidates scored correctly identifying the cutting mat and glue stick and their use. The hot wire cutter was frequently not recognised. Centres would benefit from examining the specification to identify the tools, components and equipment that could be shown in this question. Once they are identified candidates could be shown the variety of design types available from a range of manufacturers.

b

The most common correct answer was that the glue would set quicker. The most common incorrect answer was that the glue was stronger.

c

It was surprising how few candidates correctly answered this question. Approximately 20% of candidates gained 1 mark and only 10% gained both marks. The most common glue given for pine was contact adhesive.

d

This question was not well answered by the majority of candidates. Candidates achieving c/d grades often only scored 1 mark for indicating mixing as part of the preparation.

Question 2

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

a

Most e grade and above candidates scored at least 1 mark for this question. Common reasons for candidates not scoring marks were;

3. Repeating one statement twice using different words, eg Cartridge paper is thicker, Layout paper is thinner.
4. Identifying one of the types of paper as paper with printed lines on it eg isometric grid paper.

b(i)

Most e grade and above candidates scored the mark for this question.

b(ii)

Most c/d candidates gained at least 1 mark from this question. Few candidates gained full marks. This was due to the candidates answers missing the second linked point.

c(i)

This question was typically answered correctly by C grade candidates. The main reason for candidates failing to gain the marks was a lack of technical knowledge. Some candidates gave answers that related to manufacturing the blister pack backing. The wording of the question was very similar to a question in the 2004 examination. Centres would benefit by familiarising candidates with the wording and structure of questions from previous examinations. This may help candidates understand how they can best structure a response to different types of question.

c(ii)

Very few candidates possessed the knowledge required to answer this question.

d

Few candidates correctly answered this question. Candidates frequently related their answer not to the mould but to the pen holder itself.

Question 3

There were a full range of responses to most parts of this question.

a

In this part of the question nearly all candidates managed to score at least 1 mark. This was normally awarded for giving a valid point for the specification but often the candidate failed to gain the second mark for the reason. A common cause for not gaining the mark for the reason was the candidate would repeat the specification point again using different words, not adding any new justification as a reason. Most candidates scored between 2 and 4 marks.

The most common point where candidates failed to score marks was that related to environmental.

b

Most candidates scored 1 mark for indicating that being flexible allowed the case to open and close. Most candidates failed to gain the mark for a linked second point.

c

The most common correct answers related to not paying employees and not buying machinery. These answers were given by C grade candidates typically.

d

Few candidates scored full marks for this question. This was due to a combination of a lack of technical knowledge and answers that lacked the second linked point.

e(i)

Most candidates gained full marks for this question. The most common incorrect answer was for candidates to describe a test, instead of simply naming two parts.

e(ii)

Most c/d grade candidates gained 1 mark from this question. Only the good C grade candidates scored the second linked mark.

f

Most candidates gained 1 mark per part for this question. Very few candidates gained the linked second mark.

GCSE Design and Technology: Graphic Products
Principal Examiner's Report
Unit 3972, Higher Tier

Higher Tier

Question 1

This question is the same as question 3 on the foundation tier. In comparison candidates on the higher tier typically scored 50% more than foundation tier candidates.

a

Most candidates scored between 3 and 5 marks for this question. The most common reason for candidates not gaining marks was to repeat the point given for the environmental criteria. Candidates would give answers such as "the case should be made of a recyclable plastic", but then the reason "so it can be reused" which does not give any new information.

b

Most candidates score 1 mark for indicating that being flexible allowed the case to open and close. Most candidates failed to gain the second mark for a linked second point.

c

See foundation comments

d

Candidates tended to score 2 marks by giving information about injection moulding but failed to link the comment to the case.

e(i)

See foundation comments

e(ii)

Most candidates gained 2 marks from this question. The most common valid answer related to checking for sharp edges so the user did not cut themselves.

f

Most candidates gained 1 mark per part for this question. Typically only B grade and above candidates got both second linked marks.

Question 2

This question highlighted the lack of technical knowledge amongst the majority of candidates. Some of the more able candidates used the wording of the question to guess partially correct answers, but this only allowed them to gain partial marks.

a

The reasons for applying varnish were well understood by the majority of candidates.

b

Embossing was a process few candidates were able to describe. Some candidates appear to have deduced that pressure would be required to raise a section of the card, but their answers lacked the detail of how pressure would achieve the transformation. The most common incorrect answers related to applying additional layers of card.

c

The gravure and lithographic printing processes have both appeared in previous examinations. It was anticipated that this would have led to this question being more accessible. Very few candidates demonstrated appropriate levels of awareness of these commercial printing processes. This highlights the need for candidates to be taught subject specific knowledge. A candidate that may be gaining A*'s across all subject areas will be unable to answer these types of questions without being taught the content of the specification.

d

Die cutting and folding was a process few candidates were familiar with. Some candidates appear to have deduced that a combined process (of any type) would probably be quicker than two individual processes. A significant number of candidates misunderstood the word die to mean changing the colour of the card.

e

Questions about lay planning have appeared in previous examinations. It should be a relatively simple concept for candidates to understand. It was therefore surprising the number of candidates that failed to gain marks for this question. Again this indicated that the majority of candidates lacked the level of subject specific technical knowledge required to gain high marks from the exam.

Question 3

The majority of candidates performed well in this question. Part of the reason for the success of candidates may be due to their familiarity with the subjects of the questions. For example, candidates may be familiar with the advantages of PET compared to glass through their consumption of drinks, not through subject taught knowledge.

a

This question gained a full range of responses from candidates.

b

This question was well answered by the majority of candidates.

c

This question gained a full range of responses from candidates.

d

This question gained a full range of responses from candidates. The most common reason for candidates failing to score full marks was the lack of the second linked part of the answer.

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 principle examiners reports.

Centres that address this issue are likely to be rewarded with significant improvements in candidates grades.

**GCSE Design and Technology: Graphic Products
Principal Moderator's Report
Unit 3972, Coursework**

General comments

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 the boards' 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 in to too much depth.

The detailed comments that apply to the assessment criteria common to the full course report are equally pertinent to the Short Course and it is recommended that the full course report is read in conjunction with these statements.

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

Grade Boundaries - Summer 2005

Overall Grades

The figures given below are the minimum subject marks required for each overall grade in the summer 2005 examinations.

(Foundation Tier out of 100)

C	D	E	F	G
51	40	30	20	10

(Higher Tier out of 100)

A*	A	B	C	D	E
82	71	60	50	41	36

Component Marks

The figures given below are the minimum marks required for each component grade in the summer 2005 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
47	36	25	15	5

(Paper 2H out of 88)

A*	A	B	C	D	E
66	56	46	37	31	28

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

Grade Boundaries - Summer 2005

Overall Grades

The figures given below are the minimum subject marks required for each overall grade in the summer 2005 examinations.

(Foundation Tier out of 100)

C	D	E	F	G
50	40	30	21	12

(Higher Tier out of 100)

A*	A	B	C	D	E
80	70	60	50	40	35

Component Marks

The figures given below are the minimum marks required for each component grade in the summer 2005 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
22	17	12	8	4

(Paper 2H out of 44)

A*	A	B	C	D	E
31	27	23	19	15	13

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