

Design and Technology: Graphics

General Certificate of Secondary Education **J303**

General Certificate of Secondary Education (Short Course) **J043**

OCR Report to Centres

June 2013

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

OCR will not enter into any discussion or correspondence in connection with this report.

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Overview

This report provides an overview of the work seen in the written examination Units 2 and 4 and the Controlled Assessment Units 1 and 3, for candidates who took the examination during this series. It precedes a more detailed 'Report to Centres' from each subject area within the Innovator Suite and highlights general issues that have occurred across the suite of specifications. This is the fourth year of the Innovator Suite.

This report has been prepared by the Chief Examiner, Assistant Chief Examiners, Principal Examiners and Principal Moderators and covers all specifications within the Innovator Suite. It should be read in conjunction with the examination papers, the mark schemes, and the marking criteria for assessment given in the specification booklets.

Centres are reminded that it is also an Ofqual requirement that candidates are now credited for their accurate use of spelling, punctuation and grammar across all four units.

Written Examinations – Units 2 and 4

Unit 2

For this examination series of the GCSE Innovator suite entries were seen from all six subject specialisms.

The overall performance and range of results for Unit 2 was generally the same as seen in the January 2013 series. There are variations within the subject specialisms and Centres would benefit from reading the individual subject reports for this unit.

It was pleasing to see that many candidates had been well prepared for the examination by Centres and clearly had a sufficient knowledge base to answer the questions. It has been encouraging to see that candidates have been able to access the higher marks. There was also a significant improvement in the extended response style question* this series, with candidates giving detailed answers combining good subject knowledge with an ability to produce a structured response.

In **Section A** of the papers most candidates across the suite attempted to answer all questions, with few candidates giving no response (NR), although these do still occur. Candidates should be encouraged to attempt these types of questions if unsure, rather than giving no response at all.

Candidates generally demonstrated an improved understanding of sustainable design, but were often still hampered by their exam technique. Misunderstanding or misinterpreting the question, or not reading the question carefully enough was evident throughout the suite of papers. Candidates must be encouraged to take notice of the key word in the stem of the question to identify whether the question requires them to explain, describe, discuss, state, name or give.

There was less duplication of answers seen during this examination session, although one area of concern is that of the 'scattergun' approach to answering questions. Candidates need to be aware that where one answer is asked for and multiple answers are given by the candidate, candidates will lose the mark for the correct answer if an incorrect answer is also given. Some candidates approached these questions by supplying multiple answers, writing everything they can think of about the subject. Examiners cannot credit the one correct response out of several provided in a question which explicitly asks for '**one** reason' or '**one** example' because the candidate has not adhered to what has been asked for. It would be unfair on other candidates who had several possible answers in mind but addressed the question and selected their one final answer to provide rather than 'hedging their bets'.

Section B of the papers showed a greater range of responses in terms of quality and teachers need to ensure they read the subject specific reports for further detailed feedback on specific issues and individual question performance.

Candidates need to be careful that they do not repeat the question in their answer or repeat the same point within their answers.

The questions marked with an asterisk * provided candidates with an opportunity to give a detailed written answer combining good subject knowledge with an ability to produce a structured response. Many candidates did manage to use subject specific terms in their answers, but at times lacked sufficient depth and tended to be repetitive which compromised marks.

Hand writing at times was difficult to decipher and candidates need to do everything possible to ensure that their writing is legible. Centres are reminded that candidates are marked on spelling, punctuation and grammar on this question.

It was noticeable that where extra paper was required to continue a question response, many candidates did not reference the question number on the extra sheets used. It is important that Centres instruct candidates how to highlight where they are continuing an answer on a different page in the examination script to ensure that examiners are clear where an answer continues on a separate page in order that the candidate's full response is considered.

Centres need to be aware that questions may appear on the back page of the examination document and candidates should be encouraged to check carefully that they have completed ALL questions.

Unit 4

For this examination series of the Innovator suite entries were seen from all six subject specialisms. The overall performance of candidates was varied across the suite once again this series.

Some key areas which Principal Examiners have highlighted as giving scope for improvement are as follows:

- Candidates should attempt every question.
- It is important that candidates read the questions carefully to determine exactly what is required before attempting an answer. It can be helpful for candidates to highlight what they consider to be the 'key' words or instructions.
- In those questions that require candidates to produce sketches and notes, it is essential that answers are made as clear, detailed and technically accurate as possible.
- There were many instances where examiners were unable to decipher illegible handwriting and poor quality sketches.

Controlled Assessment – Units 1 and 3

Most Centres have been prompt in the dispatch of documentation to OCR and moderators, which is to be commended. **It is important that Centres return the portfolios to the moderator within three days of receiving the sample request.**

Centres are reminded to forward form CCS160 to moderators. It is helpful if Centres also include a record of the marks allocated to each candidate for each of the marking criteria sections.

Candidates producing paper portfolios should be entered for postal (02) moderation. Candidates producing their portfolio on a CD or memory stick should also be entered for postal (02) moderation.

Centres must ensure that if candidates are entered through the repository (01), the portfolios must be uploaded via Interchange and **NOT** sent through to the moderator on a disc. The preferred format of files presented for this type of moderation needs to be PowerPoint, PDF or Word, with work saved in ONE file only and numbered, not as individual sheets saved as different files.

Portfolios should be clearly labelled with the Candidate and Centre name and number, with the unit code and title also evident. (*Specification - 5.3.5 Presentation of work*) This is particularly important when the Centre submits work via the OCR Repository, where individual files are used to store portfolio work. Centres must ensure that candidates clearly label each file using the marking criteria section headings; this facilitates a more effective completion of the moderation process.

Centres are also reminded to ensure that the OCR cover sheet is included with each portfolio of work, outlining the theme and the starting point chosen by the candidate.

JCQ documentation on Controlled Assessment (September 2011 – August 2012) clearly states that any guidance given to candidates must be clearly recorded. *4.5.2 When marking the work, teachers/assessors **must not** give credit in regard to any additional assistance given to candidates beyond that which is described in the specification and **must** give details of any additional assistance on the appropriate record form(s). **This includes providing writing frames specific to the task.** (e.g. outlines, paragraph headings or section headings).*

In light of the information given above, Centres need to take care when using writing frames in the controlled assessment portfolios.

Many candidates included a bibliography or referenced their research sources, which was pleasing to see. **It is good practice to ensure that candidates acknowledge sources of information used for the development of their portfolio work.** *5.3.2 Definitions of the Controls* section in the specification states: “*The teacher must be able to authenticate the work and insist on acknowledgement and referencing of any sources used*”.

Centres are to be reminded that the ‘*controlled assessment task must NOT be used as practice material and then as the actual live assessment material. Centres should devise their own practice material using the OCR specimen controlled assessment task as guidance.*’ *Specification - Section 5.2.2 Using Controlled Assessment Tasks.*

It is a requirement in the Making criteria that candidates “*demonstrate an understanding and ability in solving technical problems*”. **Centres must therefore ensure that problems encountered are written into the record of making, for the higher marks.** Marks were compromised here this examination series.

4.1 ‘Schemes of Assessment’ clearly states that “*A Minimum of two digital images/photographs of the final product showing front and back views*” should be evident in the candidate portfolio. **It is the Centre’s responsibility to ensure that photographs are evident, are of a good quality and are of the candidate’s own work.**

A531 Introduction to Designing and Making

Candidates clearly need guidance to complete the Creativity strand. From the theme and starting point candidates should identify at least two appropriate existing products to analyse. From this analysis they need to establish an understanding of the principles of **good design** for the product and then identify **the trends** in the design of the existing products. From these findings candidates should demonstrate that they have an understanding of the needs of the users. With all this information to hand candidates should then produce a clear concise and precise design brief.

Successful Candidates:

- Provided examples of users and the user's needs.
- Carried out a thorough analysis of at least two existing products identifying what made them good designs and explained the significance of any trends in these existing products.
- Used sketches and photographs to illustrate their findings. They briefly analysed the information gathered before using this to generate a concise design brief that clearly identified the product and users.

DESIGNING

Candidates should start this strand by analysing their design brief. They then need to produce a suitable specification for their prototype product. Candidates are advised to make clear links between their analysis of the design brief and the design specification.

The design specifications produced by candidates varied in content and detail this session. Some candidates produced simple lists that were vague and generic and which could well have applied to most prototype products. Other candidates provided unique, detailed specifications that clearly applied to the prototype product they intended to make. A good design specification forms an essential checklist that will guide the candidate through this controlled assessment.

Most candidates used freehand sketching to illustrate their initial design ideas. Some candidates generated and developed detailed ideas showing a range of various styles, shapes and surface graphics solutions. These ideas were fully explained with notes. Most candidates were able to identify and fully explain their choice of final idea.

To illustrate their chosen prototype design many candidates produced an orthographic drawing and provided further details of their prototype, its sizes, its construction and materials to be used. However, a growing number of candidates failed to provide details of their proposed prototype, an orthographic drawing should form an essential part of the designing strand.

Many candidates used ICT to present their detailed drawings and surface graphics. At this stage some candidates clearly used ICT to produce a final design for their prototype, but failed to include in their portfolios the developmental work that they had clearly undertaken using ICT. A series of screenshots of the work they had undertaken would have seen them gain greater credit.

For candidates to achieve high levels of competency marks for surface graphics, they need to show that they have used sufficient rigour in creating the graphics and that they have adapted or developed the graphical images from the original idea concepts. If a candidate only takes the images without adapting them, ie 'cut and paste' using just original images from the internet, then candidates are not demonstrating high levels of competency in producing the surface graphics.

It was a concern to see that this section was the least well executed area of the portfolio this session. The quality and variety of sketching and range of methods used were not particularly polished or very creative. It is not sufficient to include three or four design ideas of a similar style/design in this section for the higher marks. Care must be taken to ensure the ideas presented by the candidate show differences in style, shape and surface graphic layouts.

Successful Candidates:

- Briefly analysed their design brief and drew conclusions from this work.
- Incorporated a structured and detailed design specification.
- Presented their design ideas using pencil sketches to generate a range of free-flowing ideas which were then fully explained with annotation.
- Explained, with reasons, their choice of prototype product.
- Produced a detailed scale drawing of the prototype product giving full details of possible materials, likely construction methods and processes, and of surface graphics.
- Communicated their designs using appropriate skills and techniques including ICT.

MAKING

Most candidates successfully produced a prototype product. Overall, this was the most successful aspect of the work seen. Most candidates appeared to have worked skilfully and safely to produce prototype products of reasonable to high quality.

Most candidates provided some evidence of modelling in their portfolios. It is essential that all candidates include evidence of modelling in their folders in order to gain credit. Modelling evidence might include cut and paste examples of models, photographic images, and screenshots showing how their design was modelled and developed using ICT.

Surface graphics were successfully applied to most prototype products seen using both traditional rendering methods and the extensive use of ICT.

Most candidates had chosen compliant materials for Graphics for their prototype products and had made sound choices of tools and equipment. Furthermore, all candidates had chosen and used facilities appropriate to Graphics.

TWO DIMENSIONAL SOLUTIONS

Centres need to understand that the Making assessment strand requires candidates to both make a prototype/product from compliant materials and apply graphics to that product/prototype. There is a danger that a 2-Dimensional outcome may require only limited making and this will make it difficult to apply the full range of marks when little making has taken place. For example, a paper/card insert for a plastic CD/DVD case there is little making to assess, just the graphics that have been applied. Whereas, if a candidate produces a card CD/DVD case (box set type or a more complex card structure) and then applies graphics, both making elements can be assessed and the full range of marks applied.

If there is insufficient rigour and depth to work produced in the surface graphics of these 2D solutions then the prototype can only attain the basic ability strand for the **making**. In order to achieve higher marks for the surface graphics candidates are required to manipulate and develop these graphics, rather than a simple cut and paste solution.

Important: It is essential that candidates include in their portfolio, written evidence that they have effectively solved technical problems as they arose. This aspect of the assessment was often over marked by centres, with high marks awarded where little evidence was **present** in the portfolios.

Almost all candidates had planned the making of their prototype product. Most candidates had then included a record of the key stages in making the prototype product using notes, sketches and photographic images. Many had highlighted difficulties and problems they had encountered and how they had overcome them. This is to be commended.

Successful Candidates:

- Used modelling to identify problems and make appropriate modifications.
- Clearly assessed the suitability of the prototype considering in detail the needs of the user.
- Made appropriate choices of materials, tools and equipment.
- Worked skilfully and safely to produce a high quality prototype product suitable for the intended user, which had surface graphics, applied that demonstrate a high level of competency.
- Assessed and applied knowledge appropriate for Graphics.
- Demonstrated their ability, in writing, to solve problems effectively and efficiently as they arose.
- Recorded the key stages in the creation of the prototype product providing comprehensive notes and visual evidence.

CRITICAL EVALUATION

Many candidates based their evaluation on their prototype product and specification. In many cases the modifications candidates outlined were improvements to the prototype product.

The Specification for Unit A531 clearly states that the evaluation should be of the designing and making process only. Furthermore, any modifications proposed by the candidate should be of ways to improve the designing and making process. The record that candidates will have kept of the designing and making of the prototype (in the Making strand) together with the recording of any technical problems the candidate had overcome (also in the Making strand) should form the basis of their evaluation.

Successful Candidates:

- Produced a critical evaluation that evaluated the processes involved in designing and making their prototype product.
- Were able to reflect and suggest modifications to improve the modelling and prototyping processes, through reference to their planning and recording of the stages in making their prototype product.

QUALITY OF WRITTEN COMMUNICATION

Centres applied this mark fairly and accurately. Candidates should be encouraged to use appropriate specialist terms throughout their folder.

REFERENCES

Centres must ensure that candidates reference or acknowledge their sources within the portfolio. Quotations must also be clearly marked and a reference provided wherever possible.

A532 Sustainable Design

This paper proved to be accessible to all candidates and a good range of differentiated responses were seen throughout the paper. There were plenty of opportunities for all levels of candidate to access the questions and gain marks.

The vast majority of candidates attempted to answer all of the questions and there was no evidence to suggest that they did not have sufficient time to complete the paper.

The quality of candidate responses was similar compared to the last examination series, candidates continued to show that they are becoming better prepared for this examination.

Candidates demonstrated a good understanding of the terminologies involved but were occasionally let down by poor exam techniques. There has been some improvement in questions where candidates are expected to explain or describe.

Misunderstanding or misinterpreting the question, or not reading the question carefully enough was evident in some candidate responses. Occasionally candidates' answers were merely taken from the question itself and where two reasons or an explanation were required the same point was made twice with slight word variations. Candidates often gained only 2 or 3 marks from a 6 mark question because they failed to explain or reason their response or they simply repeated their answers. Candidates must be encouraged to take notice of the key word in the stem of the question to identify whether the question requires them to state, give, explain, describe or discuss.

Some candidate's handwriting and sketches were very difficult to decipher. Candidates should be prepared to make an effort with their writing, and sketch in as clearer manner as possible in an examination situation.

There were no questions that were avoided by the whole entry (NR response) and there were no questions that did not attract a full mark score on at least a few scripts.

The paper provided plenty of opportunities for all levels of candidate to access the questions and gain marks.

Question 1

Almost all candidates were able to correctly identify that Eco-friendly materials use sustainable sources.

Question 2

Very well answered, with almost all candidates correctly identifying that Primary recycling is using a product again without changing it.

Question 3

A good proportion of candidates were able to identify that the Green Dot symbol shows that a manufacturer has contributed towards recycling. The most common incorrect answer was that the manufacturer is environmentally friendly.

Question 4

Almost all candidates were able to correctly identify that to disassemble a product means to take it apart.

Question 5

A good proportion of candidates identified that the symbol shown meant that glass should be disposed of in a bottle bank.

Question 6

The majority of candidates correctly stated that the Mobius Loop symbol was used to show that a product was able to be recycled, incorrect answers stated that the material was made 'from' recycled material.

Question 7

Almost all candidates were able to correctly give the meaning of the term disposal, either stating 'to throw away' or 'get rid of.'

Question 8

Many candidates struggled to correctly identify 'Thermochromic' as the correct smart material.

Question 9

Most candidates were able to give a specific named plastic that could be recycled, although a few candidates simply stated 'plastic' or 'thin plastic.'

Question 10

Many candidates were able to signify that Geothermal power was power created by the earth but less were able to correctly make the link between 'energy generated' and 'from earth's heat.'

Question 11

A good proportion of candidates were able to identify that the statement is false; Aluminium is a recycleable material.

Question 12

The vast majority of candidates selected that the statement is false, the use of non-renewable materials should not be encouraged.

Question 13

Around half of candidates correctly answered that CFC's are not beneficial to the earth.

Question 14

Almost all candidates correctly identified the answer as true; good design is there to improve the quality of life.

Question 15

Well answered, with almost all candidates selecting true, COSHH regulations help to protect workers from exposure to hazardous substances.

Question 16(a)

A large proportion of candidates were able to correctly identify the card or outer package as the part that could biodegrade.

Question 16(b)

In this question candidates were asked to explain three ways that the manufacturer could make the packaging more environmentally friendly. Correct answers focused on reducing the use of bleached card, unnecessary packaging, removing the plastic window or vacuum formed bubble. Many candidates were able to identify 2 or 3 suitable ways of making the packaging more environmentally friendly, fewer candidates were able to then go on to fully explain the reason for their choice, Many candidates simply repeated the same explanation. Candidates should be encouraged to try to vary their reasoning and explanations, try to think of discretely different reasons in order to achieve the highest marks available.

Question 16(c)

A good proportion of candidates were able to correctly identify that the outer package is wrapped in cellophane to prevent it being tampered with or to protect the packaging/outer box from damage. Some candidates thought that the cellophane would stop the glass bottle from smashing if dropped or just simply wrote 'protection', candidates should try where possible to word their answer in a way that enables them to include some detail, such as 'It would protect the packaging from being tampered with or damaged.'

Question 16(d)

Many candidates were able to achieve at least one of the two marks available to correctly identify two benefits to the community, some candidates struggled to link advantages to that of the community and gave benefits to the manufacturer that would have no benefit on the local community.

Question 16(e)

A mixed response was seen in this question. Many candidates gave very clear ways that consumers could make the packaging easier to recycle such as separating the materials, but it was evident that many candidates had not read the stem of the question carefully enough and gave ways that the 'manufacturer' could make the packaging more recyclable.

Question 16(f)

This question was well answered with the majority of candidates able to achieve at least 2 or 3 of the 4 marks available for completing the diagram to show the tertiary recycling process. It was pleasing to see candidates demonstrating their understanding of the process.

Question 17(a)(i)

Candidates were asked to explain the meaning of the term functional, with reference to the child's lunchbox shown. Many candidates were able to state and then go on to explain that the lunchbox needed to 'do its job' or 'fulfil its purpose' to contain and store a child's lunch. Some candidates were able to achieve the full 3 marks by explaining a further function, such as having a handle which made it portable.

Question 17(a)(ii)

Candidates generally struggled to explain the term 'built-in obsolescence.' Where a candidate understood the term they were able to give clear and well-thought out responses that described that the lunchbox would be 'designed to last a short period of time' and then explain that a part of the lunchbox will break, forcing the consumer to buy a new one.

Question 17(b)(i)

A mixed response was seen here, correct answers saw candidates being able to identify that the numbers and letters shown demonstrate the 'type' of plastic that it is. A number of candidates thought the number referred to the 'number of times' the product had been recycled.

Question 17(b)(ii)

Most candidates were able to achieve 1 of the 2 marks available, usually by identifying that the consumer would be able to 'feel' the embossed symbol, a smaller proportion were able to then go on to identify that this was because the symbol was 'raised' or 'indented.' Many candidates simply stated that the symbol would 'stand out', candidates should ensure that they try to be more specific, the term 'stand out' does not give enough information about the nature of embossing unless it is linked to 'touch' or 'feel.'

Question 17(c)

In the extended writing question, candidates were required to explain how Life Cycle Analysis (LCA) is an important aspect of a designers role. Many candidate answers related to the issue of product analysis rather than LCA, usually linking the suitability of a product for the target market, this resulted in many low level responses. Some candidate answers touched on LCA – usually by referring to what might happen to the product after use, but it was evident that many candidates did not address the issues of LCA in enough detail or use examples – they simply repeated information from previous questions. High achieving responses usually began with demonstrating that they understood the meaning of the term LCA, explaining that it is an environmental analysis of the 'lifetime' of the product from manufacture through to disposal, they then went on to explain the issues that the designer will need to consider such as; material selection, energy used in manufacture, the impact of packaging and transportation on the environment, then finishing with the consideration of how the product will be disposed or repaired. A very small number of candidates demonstrated the use of bullet points or lists, these can only be credited a maximum of 2 marks and should be avoided. Words like 'because', 'so that', 'as well as' and 'furthermore' should be used to link statements and develop a theme or argument. For the higher level marks, candidates must use specialist terms, real-life examples, accurate grammar, correct punctuation and precise spelling. It was pleasing to see a slight improvement on the quality of spelling, punctuation and grammar in candidate responses since the last examination series, centres should continue to provide opportunities for preparing and practicing the extended writing question.

Question 18(a)

Candidates were required to give three benefits to the environment of using a computer program to create the net (development.) Many candidates were able to score 2 or 3 of the 6 marks available, stating a benefit of using the computer such as; tessellating, accuracy, 3D modelling but many candidates found it difficult to link these points to any other benefit to the environment except for 'reduction of waste.' Some candidate answers were generic, vague or simply repeated each benefit. To score highly candidates should be encouraged to try and give specific or detailed responses that are different in content in order to avoid repetition.

Question 18(b)

A good proportion of candidates were able to describe a disadvantage to the environment of using computers, the most common answer was the use of electricity that has been generated from non-renewable resources such as coal.

Question 18(c)

The majority of candidates were able to give 'rethink' or 'reduce' as the correct answer to the tessellating of the net (development.) Candidates understanding of the 6Rs is good.

Question 18(d)(i)

This question required candidates to state 2 ways that a manufacturer can decrease their carbon footprint. Candidates suggested using sustainable sources of energy, manufacturing and distributing locally, turning machinery off when not in use, and most candidates were able to achieve at least 1 of the 2 marks available. Candidates often used very simple terms such as 'don't waste materials', 'use recycled material' or they repeated their answer, candidates should be encouraged to avoid repetition and try to ensure their response is detailed and objective to ensure it is a creditable response.

Question 18(d)(ii)

This question saw a great variety of pleasing responses, candidates were asked to design a symbol that could be printed onto packaging to show consumers that the product has a low carbon footprint. Many candidates designs showed a footprint with a link to carbon dioxide, an arrow or level/measure that showed that the carbon was 'low', many candidate answers were contained within an outer shape (usually a circle) to complete or integrate the symbol. There were some good examples of designs that were fully integrated to form a 'symbol' but some candidates were not able to achieve full marks as their design was not a symbol merely a series of drawings. Graphics candidates should be encouraged to understand and be familiar with the term 'symbol', they should also understand that a symbol needs to be clearly drawn so that it can be understood easily from a distance – candidates should be encouraged to use block shading or outlines with no features if they are drawing a symbol. Graphics students should also try to ensure that they produce a good quality, clear drawings if they are to achieve high marks, some candidates struggled to draw a clear representation of a footprint.

A533 Making Quality Products

DESIGNING

Candidates should start this strand by stating and analysing their design brief. **Candidates do not need to include product analysis or extensive research in this unit.** It is sufficient to add a brief personal analysis of aspects of the theme that has inspired the candidate. They then need to produce a suitable specification for their product. Candidates are advised to make clear links between their analysis of the design brief and the design specification.

The design specifications produced by candidates varied in content and detail. Candidates need to justify each specification. Some candidates did provide uniquely detailed specifications that clearly applied to the product they intended to make. A good specification forms an essential checklist that will guide the candidate through this controlled assessment.

Most candidates used freehand sketching to illustrate their initial design ideas though these were often of very poor quality. Enhancement techniques were rarely used. Some candidates generated and developed detailed ideas showing a range of various styles, shapes and surface graphics solutions, which were fully explained with annotation. Most candidates identified a chosen idea, but a few failed to explain their choice of design solution.

To illustrate their chosen prototype design most candidates produced an orthographic drawing and provided further detail of their product, its construction and materials to be used. Many candidates used ICT to present their detailed drawings and surface graphics. At this stage some candidates clearly used ICT to produce a final design for their prototype using ICT but failed to include in their folders the developmental work they had clearly undertaken using ICT. A series of screenshots of the work they had undertaken would have seen them gain greater credit.

Successful Candidates:

- Briefly analysed their design brief and drew conclusions from this work.
- Incorporated a structured and detailed design specification.
- Presented their design ideas using a variety of media to generate a wide range of ideas which were then fully explained with annotation against the specification points.
- Explained, with reasons, their choice of quality product.
- Produced a detailed scale drawing of the product giving full details of possible materials, likely construction methods and processes, and of surface graphics.
- Communicated their designs using appropriate skills and techniques including ICT.

MAKING

Most candidates successfully produced a quality product. Overall, this was the most successful aspect of the work seen. Most candidates appeared to have worked skilfully and safely to produce products of a high quality.

Planning consisted of a flow chart for most candidates. A plan in a table format that shows each stage, tools, quality points, equipment and processes would be of benefit to candidates.

Few candidates provided any real evidence of modelling in their folders. Clearly modelling must have taken place as products had developed from earlier designs. It is essential that candidates include evidence of modelling in their folders in order to gain the higher marks.

Surface graphics were successfully applied to most products seen using both traditional rendering methods and the extensive use of ICT. If there is insufficient rigour and depth to work produced for the surface graphics then the product can only attain the basic ability strand for the **making**. In order to achieve higher marks candidates needed to show that they had manipulated and developed their surface graphics rather than using simple cut and paste solutions in their application of these images for their final product.

Most candidates had chosen compliant materials for Graphics for their products and had made sound choices of tools and equipment. Furthermore, all candidates had chosen and used facilities appropriate to Graphics.

Important: It is essential that candidates evidence, in writing, that they have effectively solved technical problems as they arose. This aspect of the assessment was often over marked by centres, with high marks awarded where little evidence was **present** in the portfolios.

Most candidates had included a record of the key stages in making the prototype product using notes, sketches and photographic images. A photographic record with annotation or even a scrapbook diary that is completed in each lesson would be useful in completing this section. Centres are reminded that for all aspects of the making process evidence must be provided in the portfolio.

Successful Candidates:

- Used modelling to identify problems and make appropriate modifications. They provided a clear making plan.
- Clearly assessed the suitability of the product considering in detail the needs of the user.
- Made appropriate choices of materials, tools and equipment.
- Worked skilfully and safely to produce a high quality product suitable for the intended user which has surface graphics applied that demonstrates a high level of competency.
- Assessed and applied knowledge appropriate for Graphics. Successful candidates clearly demonstrate in writing, their ability to solve problems effectively and efficiently as they arose.
- Recorded the key stages in the designing and making of the product providing comprehensive notes and visual evidence.

CRITICAL EVALUATION

All candidates based their evaluation on their product and specification. Care needs to be taken to ensure that testing is rigorous, meaningful and well reasoned.

Successful Candidates:

- Produced a critical evaluation that evaluated the product against the specification.
- Undertook detailed testing and drew conclusions that lead to modifications that will improve the product.
- Used appropriate specialist terms throughout their folder.
- Referenced or acknowledged their sources within the portfolio. Quotations are also clearly marked.

A534 Technical Aspects of Designing and Making

General Comments

The paper performed as anticipated and most candidates attempted all questions. There was no evidence to suggest that candidates did not have enough time to complete the questions.

Questions marked with an asterisk* provide candidates with the opportunity to give detailed written answers which demonstrate good subject knowledge and their ability to write structured, coherent answers.

The range of responses provided good evidence of the understanding of the technical aspects of designing and making. It was clear that candidates had been well prepared for the examination.

Comments on specific questions

Question 1(a)

This was generally answered well, but some candidates got the base and front mixed up. Many left off the flaps or drew insufficient flaps. Most candidates managed to get 2 or 3 marks.

Question 1(b)

Most candidates answered the prototype cutting tool correctly but many gave incorrect answers such as 'cutting knife'. Laser cutter and die cutter were the most common correct answers for the 2nd and 3rd marks. Many gave at least one correct answer but a significant number got these the wrong way round.

Question 1(c)(i)

The vast majority of candidates could correctly give a correct purpose for the insert. Most answers focused around holding the bottles upright or in place.

Question 1(c)(ii)

Few candidates were able to answer this correctly. Many candidates were able to guess the first word but only a small proportion (around 7%) knew the meaning of all three.

Question 1(d)

This was generally poorly answered with surprisingly few candidates able to gain a mark. Many candidates chose inappropriate plastics such as vinyl, PVC or acrylic. Knowledge of plastics appears to be weak.

Question 1(e)

There were a wide range of responses to this question. There were some very clearly drawn answers that gained both marks but very few candidates managed this. Many candidates were able to suggest curved edges, but very few candidates demonstrated knowledge of drafting or the drilling of holes. Many answers were drawn underneath rather than on the section given.

Question 2(a)

The majority of candidates answered this correctly. Most answers referred to 'how it would look'. Most common incorrect answers related to testing whether the building would work.

Question 2(b)

Most candidates managed to achieve at least one mark on this question. Most common correct answers related to it being easy to cut and shape. A significant number of candidates gave one word answers such as strong, cheap, tough, durable etc.

Question 2(c)

This question was very poorly answered in general. Many candidates did not read the question correctly and applied shading to the office block rather than shadow.

Many candidates managed to give a shadow of some sort and gain 1 mark but very few gave any hint of construction. Only a very small proportion of candidates (around 2%) gave a correct answer and scored both marks.

Question 2(d)

The majority of candidates achieved 3 or 4 marks for this question.

Question 2(e)

Most candidates managed to achieve at least one mark on this question. Most were able to give the correct length of the side. Many also gave the correct length of the top but few were able to give the correct width. Some candidates got the measurements of the top the wrong way around. Many did not take the thickness of the foamboard into account and gave 180mm as the width.

Question 3(a)

There were a wide range of responses to this question but few responses scored the full four marks. Most candidates drew some kind of isometric projection and many were able to draw the front section of the box file. Many candidates missed out on the higher marks by failing to draw the sides to the correct size, add the thickness or show the internal corner details.

Question 3(b)

Very few candidates were able to correctly identify the eyelet. Fewer still were familiar with click rivets. Many candidates gave nut and bolt as answers. Many gave no answer at all.

Question 3(c)*

This was generally answered well.

Almost all candidates were able to identify at least one advantage of CAD/CAM. The most common being its accuracy compared to 'by hand'. Many candidates gave the possibility of computers malfunctioning and crashing as the main disadvantage. Most were able to apply these to designing a prototype of the box file but many answers related to the use of CAD/CAM when mass producing items.

Many candidates discussed CAD and CAM separately but gave the same discussion and reasons for both. Few candidates were able to broaden or consolidate their discussion and their answers read more like a list than a structured discussion.

There was little use of specialist terms in all but the higher achieving candidate responses.

There was less evidence of candidates using bullet points or lists than in previous sessions but some candidates' handwriting was still very difficult to decipher.

Question 4(a)

Generally, candidate answers for this question fell into three groups. Many candidates answered this correctly; many got the right colours, but not always in the right order. A surprising number of candidates did not appear to have any knowledge of the colour wheel and gave answers with black, white and pink.

Question 4(b)

Approximately half of candidates answered this correctly. Many candidates gave good explanations of translucent but 'transparent' and 'hollow' were common incorrect answers.

Question 4(c)

Most candidates were able to score 1–2 marks by showing the flag and the pole and a suitable method of attaching the flag. Many candidate answers lacked enough detail, in particular, an appropriate adhesive, to gain the 3rd mark.

Question 4(d)

This question was generally well answered with the majority of candidates scoring three or four marks, although few scored the full six. Generally most candidates were able to score marks on this question but many failed to draw designs that met the points given in the specification. The weaker answers failed to make their solutions portable, failed to suggest an appropriate graphic material, or failed to show 6 teams. There were many answers with insufficient detail of how the team's scores could be updated. Many of the materials given were resistant materials rather than compliant graphic materials.

Question 5(a)*

This was generally answered well.

Almost all candidates were able to identify at least one difference in the bags and describe this in some way. Most were able to compare how well this aspect met the user's needs although many answers repeated the same point or read more like a list than a structured discussion.

Answers mainly focused on the differences in materials, handle designs and the recyclability issues of each bag. The use of specialist terms such as aesthetics and ergonomics were seen in many candidate responses.

The standard of language was generally better than Question 3c but some candidates' handwriting was still very difficult to decipher.

There was still evidence of some candidates using bullet points or lists which restricted their marks.

Question 5(b)

This question was generally answered well. Most candidates had knowledge of pixilation/blurring and gained the first mark but few were able to gain the two marks for the explanation.

Question 5(c)

Many candidates answered this correctly. A significant number gave answers such as 'hand size' but did not realise that 'average' was required. A small proportion of candidates had no knowledge of anthropometrics and gave answers relating to tools, materials or processes used to manufacture the handle.

Question 5(d)

A vast array of different answers was given to this question with many candidates scoring 2 marks. Many candidates focused on environmental issues, but strength/weight capacity was also common. There was some consideration of aesthetics/advertising along with moral and cultural issues. Some candidate answers were simply one word statements eg environmental/cultural/cost with no explanation or attempt to elaborate. These answers scored no marks.

Overall

The entry for this unit was similar in size to last year's June entry. There was a wide range of responses from the cohort which spanned the full ability range. Responses from the candidates were generally encouraging and demonstrated a good understanding of the technical aspects of designing and making.

The examination paper was generally appropriate to all levels of ability and most candidates attempted the majority of the questions. The quality of sketching on the designing questions was good on the whole, but the quality of drawing on the graphical questions using grids was still of a lower standard, despite the apparent need for 'less graphical skills' to answer this paper. Many candidates could improve their performance by using a ruler for these questions.

The quality of written communication was also extremely variable but on the whole showed a slight improvement on previous sessions with the levels of response generally being higher. Quality of handwriting has also improved on last year with very few cases where it was extremely difficult or impossible to make sense of some candidate responses.

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

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Telephone: 01223 552552
Facsimile: 01223 552553

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