OCR
RECOGNISING ACHIEVEMENT

GCSE

Design & Technology (Product Design)

Reports on the Units

January 2010

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General Certificate of Secondary Education Product Design (J901)

General Certificate of Secondary Education (Short Course) Product Design (J900)

REPORTS ON THE UNITS

Chief Examiner's Report

General Comments

All centres should note that this coming May/June is the **last** sitting for these units and there will be **no further assessment** of this specification after this time.
A new GCSE Product Design specification was available from September 2009.

With the increased use of OCR's Moderation Manager all centres are respectfully requested to ensure that the email address for the recipient within the centre is both accurate and kept up to date by informing moderationmanager@ocr.org.uk directly.

Centres are reminded that for Unit 1 Candidates <u>are not required to make</u> their design outcomes. However, with appropriate teacher guidance and support, the design outcomes may well be realised in Unit 3 Making, Testing and Marketing but do not have to be. There are distinct benefits for candidates undertaking totally different projects for B801 and B803.

Entry codes for this unit were streamlined from last January with B801/1 or B803/1 being the entry codes for either a paper portfolio or a CD - ROM submission. This has saved centres considerable administration time.

All centres are reminded that there are separate moderators for B801 and B803 (and also A551 and A553- new specification) and therefore completely separate administration is required. A small number of centres despatched both units to the same moderator which caused difficulties with moderation.

For the final assessment in May/June 2010 the submission of the CSF (Coursework Summary Form) along with the 2nd copy of the MS1 (Mark Sheet 1) or electronic equivalent is still required to be sent directly to the Moderator on or before the 15th May.

A good number of centres have adopted the practise of submitting the full cohorts portfolios on one CD-ROM which is both effective for centres and for moderators. If centres wish to adopt this practice for the new specification, rather than the original instruction of one CD-ROM per candidate, they may do so. Several centres submitted work on a flash drive which is also acceptable practise. Centres should note however that only paper portfolios will be returned to centres.

Centres are advised that candidates mark breakdowns should be presented in candidate order for the **whole centre** which will be the same as that on the MS1.

Increasingly many centres are producing their own mark breakdown sheets in excel format which will allow for automatic totalling but also allows the data to be "sorted". If centres could then provide the candidates mark summaries in electronic format this will greatly assist moderators in their sample selection. It will also reduce printing costs for centres.

Centres should be aware of the textbook written in support of this specification is now available from Hodder Education **ISBN 978 0340 98200 6**. Discounts are available for class sets of the text book which has proved to be very popular with both teachers and students alike. There is also a DVD teacher resource available which centres will find of great support for the new specification.

One final, but equally important, point for all centres to note. There continues to be a large number of year nine students who are being entered for the different units in this specification. Centres must understand that they have to be assessed against the National standard for KS4.

There is clear evidence that the majority of these students are **not** mature enough and do not have sufficient experience to perform well at a GCSE so early in their education. The net result of so many achieving grades at a lower level is a dramatic effect on the statistics and percentage grades overall for the remaining candidates.

Centres should be minded of this when making decisions when entering candidates.

B801 Coursework – Developing and Applying Design Skills

The majority of candidates presented evidence for all three assessment objectives (IAO1, IAO2 and IAO3).

Based on the evidence seen for this January's examination session there are areas of the Product Design Specification where candidates need to show improvement.

- Improved **communication** skills which should include 2D and 3D sketching and rendering. Much of the work presented had communication of a low order but where centres taught those skills work ranged from good to excellent
- The selection of non teacher lead and appropriate **start points** ie "The problem identified".
- Situations/problems to be addressed which were too challenging for an average 16 year old to address in the allotted time, thus restricting access to the assessment criteria were seen once again. A large number of centres "over prescribed" the start point which severely restricted candidates accessing the assessment criteria
- **Identification** of a suitable user or user group. Once again a number of candidates had no clear focus with their design activity because they either had not clearly identified who they were designing for or, in a few instances, when they were designing for themselves. This is a common problem and restricts the design process
- **Evidence** of both the problem and the user in IAO1. This could be in the form of photos, newspaper articles, actual data obtained from the internet or elsewhere (not fabricated) or genuine interviews or questionnaires. There was, from a small number of centres, some excellent evidencing by candidates.
- **Consideration** and reflection using the Design Specification. Often the Candidates brief and their subsequent design specification are ignored after they have been written which limits access to the assessment criteria especially in stand 3 of IAO3 for which there are 10 marks available
- An appropriate **range** of clearly focused and relevant **research** activities. Internet downloads with no valid analysis or evaluation and mood boards without meaningful comments will gain no marks against the assessment criteria. Research should be undertaken to gather data and information to inform the design process and this is lacking in a large number of cases
- Development of **analytical** skills and the willingness to use their findings in the design activity. Often when research has been undertaken the information gained is ignored. The whole portfolio should demonstrate a "flow" from problem to solution in a meaningful way
- Preparation of **questionnaires** (for IAO1 and for IAO2) which will illicit relevant data and which can then be used to enhance the design activity. To produce a good questionnaire to elicit useable data is a high order skill which centres will need to teach candidates. Unless the questions and the data are meaningful they will have no value and cannot be rewarded highly
- **Modelling** skills – demonstrating manipulative modelling skills. Modelling is a basic communication and design skill which needs to be taught at KS3 and reinforced at KS4. Marks for the modelling are rewarded in strand 2 of IAO3 which reflects the candidate's consideration of function, aesthetics, ergonomics and other design influences. The modelling in this unit is **not** meant to be making a model of their final idea, but used to test the feasibility of design ideas
- Appropriate use of **CAD** or Other Computer Applications (OCA) to support and enhance the designing activity. The higher marks in strand 5 of IAO3 cannot be awarded unless the ICT (ideally CAD) is used **during** the design activity. To produce images of what has already been designed is not actually using Computer **Aided** Design software

- Production of a **range** of detailed **ideas** with reflection of the user and other design influences (Page 34 of the Product Design Specification – page 54 of the new specification). Often ideas are predictable and so preclude access to the higher marks in strand 1 of IAO3. If, in IAO1, a candidate is going to design a jewellery box (often they say "***make*** a jewellery box which is not a requirement of this unit) then designing will be restricted throughout the whole process
- Detailed and meaningful comparison of ideas and **development** against their specification. A simple tick box or marks out of ten does not show any meaningful relationship between the specification and the ideas

Comments on Individual Assessment Objectives

Internal Assessment Objectives 1 (Maximum Marks 6 Approximately 1 hours work)

Candidates will need to:
- provide a detailed description of the design need using various means of communication.
  - o **For one mark what is required:** A short description (two or three sentences would be more than sufficient) of the problem to "set the scene"
- extract from verbal, visual and statistical information the essential problems to be solved
  - o **For one mark what is required:** Evidence of some sort to justify/support the problem outlined. As stated above, this could be in the form of photos, newspaper articles, actual data obtained from the internet or elsewhere (not fabricated – this send both the wrong signals to candidates and limits access to the assessment criteria) or genuine interviews or questionnaires. It is not sufficient for the candidate merely to "state" that there is a problem they need to "prove" in some way.

- identify the range of users and the market for which the product is intended
  - o **For 1 mark what is required 1:** Identification of a single user or a user group. A specific person eg "The senior citizen who lives across the road", "estate agents" or "left handed tennis players" are examples of users or user groups. Poor examples might be when designing "it will be for senior citizens of both sexes".
  - o **For 1 mark what is required 2:** Some actual evidence of the user – some specific information/details upon which the candidates can focus their design activity. An image and information or genuine quotes from the user, objects which mean something to the user, evidence of particular like or dislikes of the user to keep the situation "real".

- develop a design brief for a marketable product which is innovative and might involve some degree of risk taking.
  - o **For one mark what is required:** One or two sentences would be more than sufficient where the candidates individually "explain" what they are going to try to achieve to solve the problem which they have identified.
  - o **For the award of one mark:** A candidate who takes on a challenging or risky activity or steers their design work with a social conscience for example "I will only consider recyclable materials in my designs because……………" (It will be the "because" or the "why" which is important) gains the 6th mark in IAO1. It is not rewardable for the candidate to merely say "I will do ……… because I will be taking a risk". There needs to be something tangible for the award of this mark.

As has been previously stated in reports to centres, the start point for all candidates is critical to empower them to proceed effectively as true Product Designers. Even Candidates who are unable to demonstrate Flair and Creativity will still gain positive rewards providing they present evidence which meets the assessment criteria.

Examples of designing a football stadium, a luxury yacht or an air ambulance, demonstrate the fact that an achievable focus was absent and resulted in design work of unacceptable depth or breadth. Centres are advised to ensure that the "Situation and User" chosen by the candidates will allow access to all the assessment criteria and also allow the design activity to proceed smoothly. Centres may wish to "theme" their candidates and this is acceptable as long as there is sufficient scope and flexibility for all levels of ability to access the assessment criteria.

One serious problem noted in IAO1 is where candidate actually specifically state what they are going to design, or, in extreme cases what they have made. This will not allow candidates the freedom to access the assessment criteria.
Centres should remember that candidates do not have to make what the design is in B801.If candidates do design with making in mind, it will limit their design activity. This is worrying when candidates clearly state that this is the case and reflects on an inappropriate centre approach.

Most candidates gained marks in IAO1 again with 3 and 4 being awarded most often but with many candidates gaining full marks where they have evidence their problem and user. The work represents about an hour's candidate work and should be presented on one or perhaps two pages (slides).

Centres are reminded that teaching activities such as planning how to approach the project, mind maps and time planners are not rewardable against the assessment criteria but are often good teaching support for candidates.

An example of a very good "situation" , "user" and excellent "evidence" for the situation is shown below.

The use of supporting electronic and ICT activity is on the increase and gives candidates the opportunity to develop these whilst accessing marks against the assessment criteria.

In the case of the example shown below the use of a short video to 'evidence' the situation and the user gets straight to the point, relays accurate information and is a 'fun' aspect of the controlled assessment (coursework).

Centres should also note that the marks for the use of ICT or Other Computer Applications (OCA) are only awarded for work in IAO3. Nevertheless they can fully contribute to the quality and content of IAO1 and IAO2 and are to be encouraged.

Internal Assessment Objective 2 (Maximum Marks 23)

Candidates will need to:
- examine the intended purpose of the product;
    - **For 6 to 7 marks what is required:** Some investigation into the user/user group requirements or the possibility of factors to avoid for example the use of milk in a product or the use of fur fabric for whatever reasons. Information such as "genuine" anthropometric data and ergonomic requirements or details of specific components such as battery holders where the use of a battery is obviously necessary for the problem being solved are required to gain marks in this strand of AO2.
    Sheets on "materials" are unlikely to gain marks unless there is a specific situation being addressed such as protective clothing for cyclist when information on Kevlar or Nomex would be relevant.
- identify and collect data relevant to the product(s) and its users;
- identify opportunities for developing new and innovative products to improve upon the weaknesses of existing products
- understand the issues that expand and detail the requirements of the product;
    - **For 0 to 7 marks what is required:** Analysis and evaluation of existing, appropriate or inspirational products. If some method of feeding a goldfish is being designed then looking at existing systems and methods, identifying their strengths and weaknesses together with materials and methods of construction is wholly appropriate.
    Candidate who seek inspiration for other sources such as architecture when designing mood lighting or fishing tackle boxes when solving a jewellery storage problem are positively rewarded accordingly but are also likely to think and design

> "Outside of the Box". However the analytical comments must relate to the problem being addressed.

- demonstrate an ability to express the results of research and analysis in the form of a suitably detailed specification.

For 0 to 8 marks what is required: Specification points which are "Specific" to the problem being solved. The generic statements of being aesthetically pleasing or being strong or easily stored have virtually no value unless they are clearly related to the specific problem in hand. Where points are justified to inform and clarify the specific specification points then the higher marks can be awarded. The use of ACCESSFM and similar acronym methods are not suitable for this level of study and often restrict candidates. These are all "writing frames" by a different names, and have their place when introducing product analysis and specification writing but are very limiting at this level.

Centres should note that unless candidates provide significant detailed analysis and justification for the content of mood boards and also indicate in their designing where they have used the influences then no marks can be credited. There was still evidence of A3 sheets of arbitrary cut and paste "mood boards" which have no value and the contents are not used or reflected on by candidates. However where correctly undertaken and with suitable annotation, they do have great value and contribute to the structure needed and "out of the box" thinking for candidates.

In general the depth and breadth of candidate research was, in many cases, insufficient for meaningful design activity. The results of research, which should consist of a range of appropriate activities, should provide data and other factors to provide direction and restriction for the design process.

Product Analysis

Function
- To provide a dock allowing the iPod to be connected to the computer and to be charged.

Materials
- Acrylic base, (shiny, easy to get hold of, could be brittle, very easy to colour and mould)
- Rubberised Polymer, non-slip grip on bottom, (will not snap, can be moulded easily, grips on most surfaces)

Anthropometrics
- Just larger than the iPod classic, the iPod will be able to fit in effectively while not being to difficult to place in and keep upright.
- Around same weight as iPod to stop tipping.
- Same shape as iPod, similar curves and measurements.

Cost
£27.50 – £50.00

Quality
- Made from firm plastic, so difficult to break.
- The dock adaptor is firmly in place so cannot fall out.
- Dock itself is made out of only one piece of plastic so cannot fall apart easily.

Ergonomics
- Holds iPod suitably so can be charged and connected to the computer very easily.
- Does not take up considerable amount of space.
- Allows connection via the stand so a cable is lost.
- The wire connecting the dock to the computer is un- necessarily long so gets tangled, this gave me an idea for wireless, which led me onto "Splashpower" (slide 15)

Aesthetics
- Smooth shape, easy to have in a room.
- The white colour matches the iPods to be inserted.
- Design suits the iPod, and the design period.
- Holds the iPod elegantly.

Safety
- Non-slip rubber grip on the bottom, so is not easily knocked over.
- Wire leading to USB port is firmly inside the dock, so connection cannot be lost easily.

The use of descriptive 'theory' inputs, as shown in these two examples, it is discouraged and will gain no marks. The assessment criteria is looking for candidates to **'apply'** their knowledge and understanding of the design influences to their own design activity.

Consumer Laws and Regulations

Standards are applied to many materials, products, methods and services. They help to make life simpler, and increase the reliability and the effectiveness of many goods and services we use. Standards are designed for voluntary use and do not impose any regulations. However, laws and regulations may refer to certain Standards making compliance with them compulsory.

When you see a product with the kite mark this means that BSI have independently tested it and has confirmed that the product conforms to the relevant British Standard.

Many products, such as New toys, must meet legal requirements before they can be sold within the European Community and must carry the CE mark. CE marking attached to a product is a manufacturers claim that it meets all the requirements of the European legislation.

This is an internationally recognisable symbol for recycling. The mark is put on many packages. It is to remind the consumer that what they are about to throw away is potential recycling property. Therefore it is aimed at helping to encourage more recycling other than throwing everything in a general rubbish bin.

The Kite mark on products ensures the buyer that it is safe, reliable and meets the appropriate British Standards. My product will need to have the Kite mark. This is because these symbols are usually found on electronic products, it is to prove that my product is safe.

Once quality research and analysis have been undertaken IAO2 requires candidates to produce a specification for their chosen design activity. Where candidates **justify** their specification points higher marks will be awarded. **N.B. Avoid using ACCESS FM and other similar acronyms at this level of study**

Specification

1. It must be aesthetically pleasing for my target market because from my questionnaire, I found out that if the product is not aesthetically pleasing, there is no incentive to buy it. This means I will try to use brighter colours and interesting designs to catch the attention of my target market.
2. It must be completely safe for children to use on a daily basis. I learnt this from my product analysis, as one of the weaknesses for lots of the products was that it was dangerous to hold, as the shapes were too difficult for young children to hold onto properly.
3. I will have to make sure the gap for the stopper is at least 4cm wide, as from my anthropometric data, I learnt that the average child's hand measures 3.39cm at this point.
4. I will have to choose a specific colour scheme because from the investigation of my target market, I learnt that the top 3 favoured colours of children in my target audience were blue, purple and green.
5. It must cost under £10.00, as from my product analysis I found that one weakness of some products was the fact that the product is too expensive. If it is too expensive, children won't have the incentive to raise up their own money which goes against my problem statement.
6. It must organise the coins in some way to fit my design brief.
7. It must be big enough to hold a large amount of coins as well as some notes as from my questionnaire I learnt that this is a good factor for wanting to buy the product.
8. It must be made of a durable material as from my environment survey I learnt that it will be used a lot.
9. It must have a modern design to appeal to my target market
10. It must take up no more than 12 cm × 12 cm as I learnt from my environment survey.
11. It must have a tight seal as from my environment survey I learnt that it will be handled a lot.
12. It must encourage children to save up money to buy things instead of asking their parents
13. It must have an innovative design with a modern flair to make it interesting for potential buyers.
14. It could have a theme as products that fit a theme are usually popular within my target market.

There are up to 8 marks for the candidates specification but a further 10 marks are available gained during the design stage where the specification is clearly used and addressed by the candidate.

Internal Assessment Objective 3 (Maximum Marks 61)

Candidates will need to:

* generate and record the development of design proposals that are innovative, show flair and imagination;
* consider user needs and issues when developing ideas;
* appraise design ideas for suitability, value and consequence;
* consider Aesthetics, Ergonomics and Function;
* use suitable communication techniques including graphics and ICT to develop and model design proposals and production systems;
* use modelling to check on the feasibility of design ideas; (1g)
* identify, with reasons for selection/rejection, the chosen design proposal(s) for prototype manufacture;
* check that the design proposal meets legislative standards. Consider patents and copyrights;
* have control on developing the product for manufacture, identify within the design proposals the resources needed for the prototype to be realised
* consider, using examples, those aspects of the design which could most easily be manufactured in quantity;
* produce a final product specification.(1e)

IAO3 has <u>five</u> separate sets of marks in five different strands. A summative approach is shown below:

1. **A range of ideas (with or without innovation and flair) showing developments 0-19 marks (20 - 25 where there is some "Wow" factor).**
2. **Technical content (the design influences, ergonomic, function and aesthetics considerations) 0-10 marks**
3. **Specification - use and consideration (best during but acceptable after the design activity) 0- 8**
4. **Communication skills showing clarity and confidence 0-8**
5. **Use of CAD 0-10 used during the design work or 0-7 if retrospective. There are up to 3 marks available for quality word processing and basic ICT drawings.**

This initial set of sketches gains marks for the range of ideas and also shows confidence and clarity in communication.
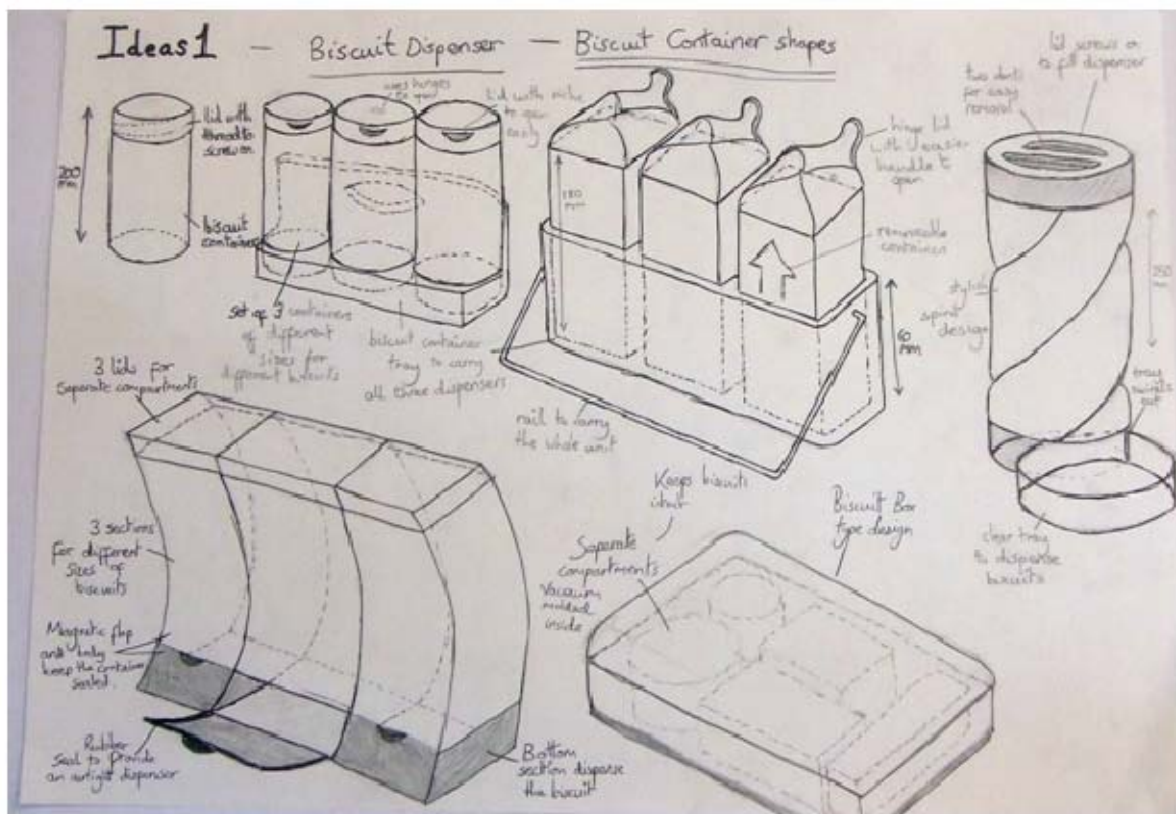
Initial Idea Six

Small decorative handle to remove coins

There are eight compartments for the eights types of coins.

Tops will be on a hinge for them to open

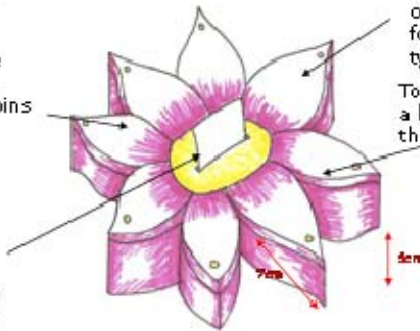Notes are released in a similar way that tissues are dispensed form a tissue box.

This design is aesthetically pleasing due to it's floral design and it uses very bright aesthetically pleasing colours for my target audience. It won't be expensive to mass produce. For this design, my customer would probably be limited to girls within my specified target market. According to my environment survey, this is larger than the average money box. It could be made from woods or plastics as both are quite durable and safe to use.

PROS: Attractive design, can be mass produced, durable materials used, no heavy lifting needed

CONS: Not attractive to my whole target market

£00.00

Simple, effective and confident graphical communication
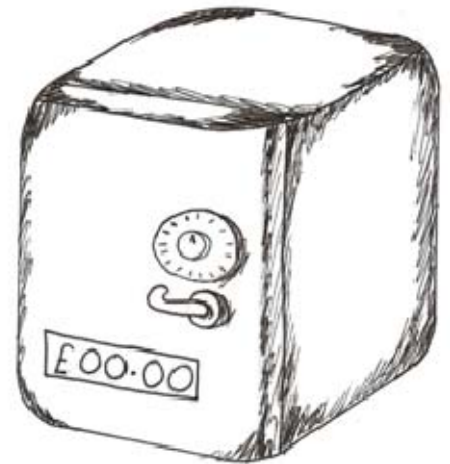
Final Design

Large, but lightweight, solar panel covers the top of the street light when open. Provides a lot of electricity and also prevents light from escaping upwards (light pollution). Also an area for electricity to be stored.

Tubular lights case in a strong plastic case to prevent damage when the street light is being folded in half, and also during transport. The shape of the lighting and casing could also reduce light pollution, aided by the light not being able to escape upwards as the solar panel is blocking it.

Easily removable base, but can also keep street light secure as it is pegged into the ground (Idea 1 in Design Development).

Rugged hinge that allows each side of the street light to be twisted up to 90 degrees. Due to its strength, it can keep the street light from breaking during heavy storms and windy conditions.

Area for lights to be securely stored to prevent movement and damage during transport.

Increases rigidity, especially during windy conditions (Idea 4 in Design Development).

The actual street light can be easily removed from the base but removing the pegs that run from the base to the street light's pole, or by removing a lock that can be placed on the peg for extra security (which would be useful for places with high crime levels).

Fig 1
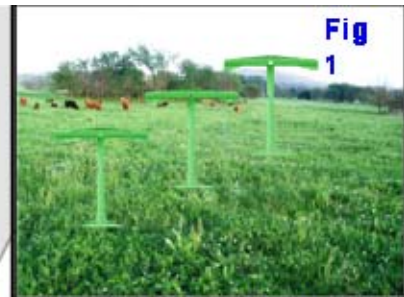
Figure 1 shows how the portable street light could be changed in colour to match the potential environment; in this case green to match the farm and grass.

Fig 2

Figure 2 shows how the portable street light could be used in places such as Africa to provide lighting, as well as the street lights integration with its environment.

CAD or OCA should be used as a design tool as shown in the example above and not just CAD has been well used here to show a solution in context as so has clearly been used as a design tool and not just drawing of a final solution.

The ability to communicate well using a range of communication techniques is a fundamental design skill.

Digital clock feature

Universal joint for lamp

Candidates are required to select an idea for development which should be clearly compared to their design specification. Additionally during the ideas stage the specification should be constantly referred to.

- For some candidates a formal method may work for comparing against their specification as in this example.

- Where candidate simply produce a grid and tick or cross ideas against specification points there is very limited value and will gain the lowest marks. The "star rating", as used below, has limited value in assessment terms.

- Equally where candidates grade ideas against the specification against a 10 point scale ie 5/10, there is limited value unless there is genuine justification of the reasoning behind the judgement evidenced.

Evaluation Against Specification

Best results are obtained when the candidates 'user' is asked to make evaluative comments on the ideas and/or development.

B803 Coursework – Making, Testing and Marketing products

The moderation process of this unit continues to demonstrate the improving understanding of the specification and interpretation of the two assessment objectives. The quality of work continues to improve.

It is important that video and sound is packaged properly in the presentation, so all evidence of work is presented when it comes to moderation. A step by step of how to do this can be found in the new OCR Product Design for GCSE text book, now available. Too often we are getting folders that have video, but we are unable to see it, as the files have not been packaged within the presentation. If we are unable to see the work we are therefore unable to moderate it.

It is imperative that centres who are entering candidates from a wide variety of material areas invest time in assessing the candidates work as a centre. All products must justify the time and quality required to achieve the GCSE standard. The procedure ensures that the rank order of candidates is correct and this greatly assists the moderator throughout the moderation process. Teachers are required to authenticate that the work is that of the candidate. Where evidence is e-portfolio based this is particularly important. Form CCS160 must be supplied in the sample selected for moderation, signed by all staff teaching the specification.

Candidates are free to present the work in any appropriate medium, both on paper format or in electronic format on CD, but not a combination of the two.

OCR would prefer candidates work is submitted on individual CD's. Centres should be aware that electronic folders are not returned, so ensure a copy is kept at the centre.

Candidates work should be bound together or contained separately in some way. Work which is left loose and gets mixed up when posted is unacceptable. Centres should ensure that work for each unit is kept separate. B801 and B803 are assessed separately.

CAD/CAM is to be encouraged where facilities are available; however, centres need to be reminded that candidates are to combine a range of skills and techniques when constructing their final outcome. **Candidates who purely use CAM to make their products cannot achieve the highest marks threshold in any area of objective 4.** OCR wishes to see the practical capability of each candidate – Objective 4 is about producing a singular quality working product.

Centres must try to ensure prompt response to examination paperwork and the forwarding of moderation samples to moderators. An appropriate postal tracking option is best in the case of work going missing.

Objective 4.

This unit is simply about creating a singular functioning quality product.

Modelling is not acceptable in this unit. **A model will achieve no marks for the quality outcome mark for Objective 4.**

The recording of the manufacture was generally well done with centres encouraging pupils to record their progress in real time. It is clear that students are enjoying this type of assessment and the content of the work is to be commended.

Previously, and below, shows parts of an excellent production log. Both show ownership and understanding of the manufacturing process. Tools and techniques are explained and where necessary health and safety implication are expressed clearly. In this case the candidate has use both images and annotation supported with a plan of manufacture.

Making the box

Tools: Pine

Material: Pine

Task: To check that the pine wood I ordered was the correct size and of a good quality.

Health & Safety: This picture shows me wearing an apron which is a health and safety procedure.

Success: All of the pine was of good quality and of the correct size
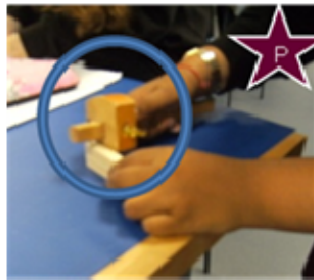
Tools: Pine and marking gauge

Material: Pine

Task: To mark the pine so it would know where to cut it to make the lap joints

Success: It was a success as it was able to mark all of the wood precisely.
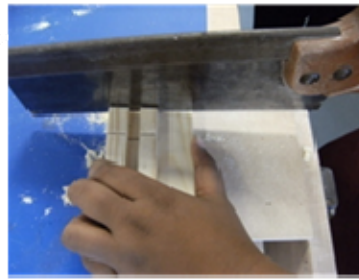
Tools: Tenon Saw and bench hook

Material: Pine

Task: To cut the wood where I had marked it so that I could create the lap joints.

Health & Safety: While cutting the wood I made sure that my hands was far away

Success: I was able to cut the pine in a straight line.

Tools: Bench hook, mallet and chisel

Material: Pine

Task: Get the unwanted wood out to allow the pieces of wood to fit together.

Health and safety: While getting the unwanted wood out I had to make sure that my hands where half way down the chisel so that the mallet didn't hit my hands.

Success: I was able to get the unwanted wood out easily

A general written step by step is unacceptable for this specification and will gain no marks. For postal moderation proof of it being the candidates work is essential. **The use of CAD/CAM is to be encouraged; however it is seen as one skill, so centres must ensure candidates have a range of skills in producing the practical work to achieve the higher marks.**

Tools and materials: I used a computer and serif draw.

Task: I used a computer to produce a drawing with a tooth paste tube, to go with he tooth brush theme with a picture of my "teeth brush" on it.

Modifications: I would not do anything different because this is the best way to make an image.

Success: It was a success because the design looked brilliant and it would go well as a tooth brush theme.

Tools and materials: I used a computer and a sublimation printer called a swing press with special paper as well as a computer

Task: I used a computer to print out my design that I was going to stick on my bag.

Modifications: I would not do anything different because this is the best way.

Success: It was a success because the design looked brilliant and would look even better on the bag

Tools and materials: Swing press

Task: I made sure that the design was good and printed it as a sample on a normal piece of paper so I did not print onto the .... just in case I made a mistake or if it was the wrong size.

Modifications: I would not do anything different because this would be the best way of printing onto it.

Success: It was a success because it looked good and would be brilliant as the packaging.

Marking of the final product was generally accurate. Centres must ensure candidates show a range of images of the final product. The images must be able to justify the marks given to the candidate.

The images on the previous page show a range of views and information to see the quality of the candidates work. Nice thing about this project is that it combines a range of materials.

It helps if centres provide some idea of scale in at least one photograph; placing a ruler or familiar object alongside the finished product. Or show the product in context, like above, using the toothbrushes.

If there is no evidence of a completed and finished product the candidate can only achieve a mark in the lowest threshold box, providing there has been some evidence of making in the images of the manufacturing process.

Objective 5.

This objective is all about taking the product forward, not recapping on anything that has happened in the making of the final product.

No repetition is required in this section, images of the final product or stages of making do not have to be reproduced. Success in this objective relies upon candidates including clear and justified evidence matching the bullet points outlined in the assessment criteria.

Evaluations are generally well done with reference to the specification and realistic user testing. It is very important that there is evidence of user group testing through images, sound or video. Below is a good example that shows clear user group feedback, images, video and audio are used to test the product. Candidates should be encouraged to explore different ways of presenting their findings. The use of video is clearly highlighted that it in the presentation

Modifications continue to be disappointing as candidates are still only offering written opinions. This is a product development opportunity and students should be sketching possible improvements that could be made to their product. Candidates may wish to alter or draw on original images of the finished product or use overlays in an innovative design way.

I have been told that I could add a speaker so that the children could listen to music and countdown two minutes down. If I add this, my product would have a few functions and the children would like it better. This would encourage them to do their brushes twice a day.

The speaker would be put on the side so no water would get onto it. It would be better for health and safety so no one would get hurt.
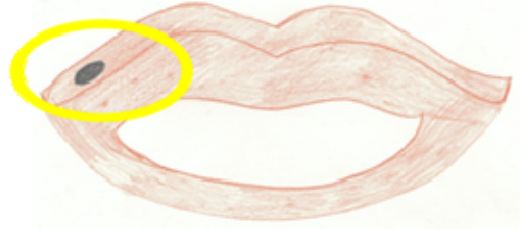
This is a waterproof speaker that I would put on the side. It would not cost that much so that I could put this on. It is even vapour resistant so parents should not worry about their children getting hurt.

Modifications
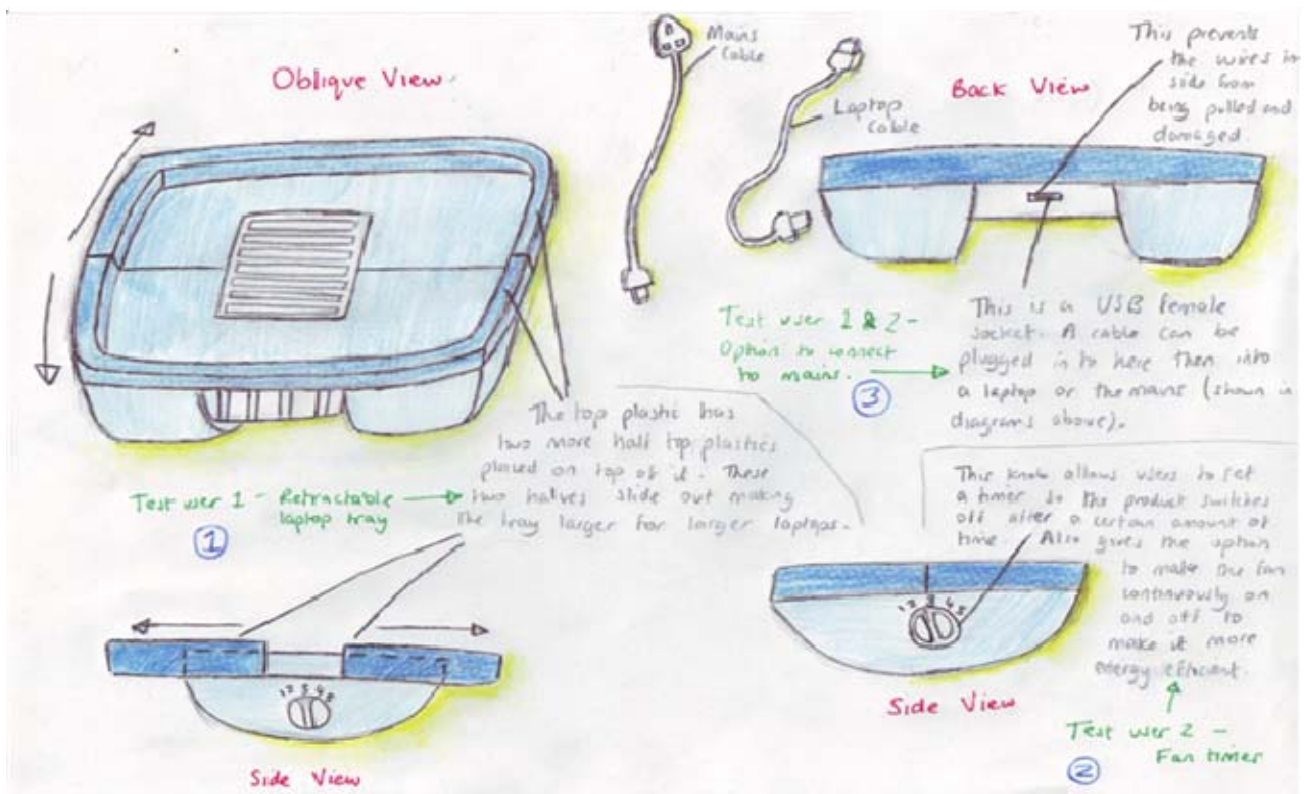
This is an exercise that can be clearly practiced as any product can be improved upon with a little imagination.

Modifications that took place in the making process are not awarded marks in this section; this would be awarded in objective 4.

Generally this section was attempted poorly, with most candidates making reference to the construction stages, rather that thinking specifically about how the finished product could be

improved. Remember this is a design subject and sketches/images/CAD etc., with clear and detailed annotation is the way this assessment point should be addressed.

Quantity production continues to be a very weak area, but it is improving. Responses tend to be very generic based on theory notes or cut and paste information from the internet. Whether this is a time issue or not, appropriate research would need to be carried out to find out how a similar product would be manufactured in a 'Real World' situation. It is then a case of applying the theory to **parts** of the candidate's product.
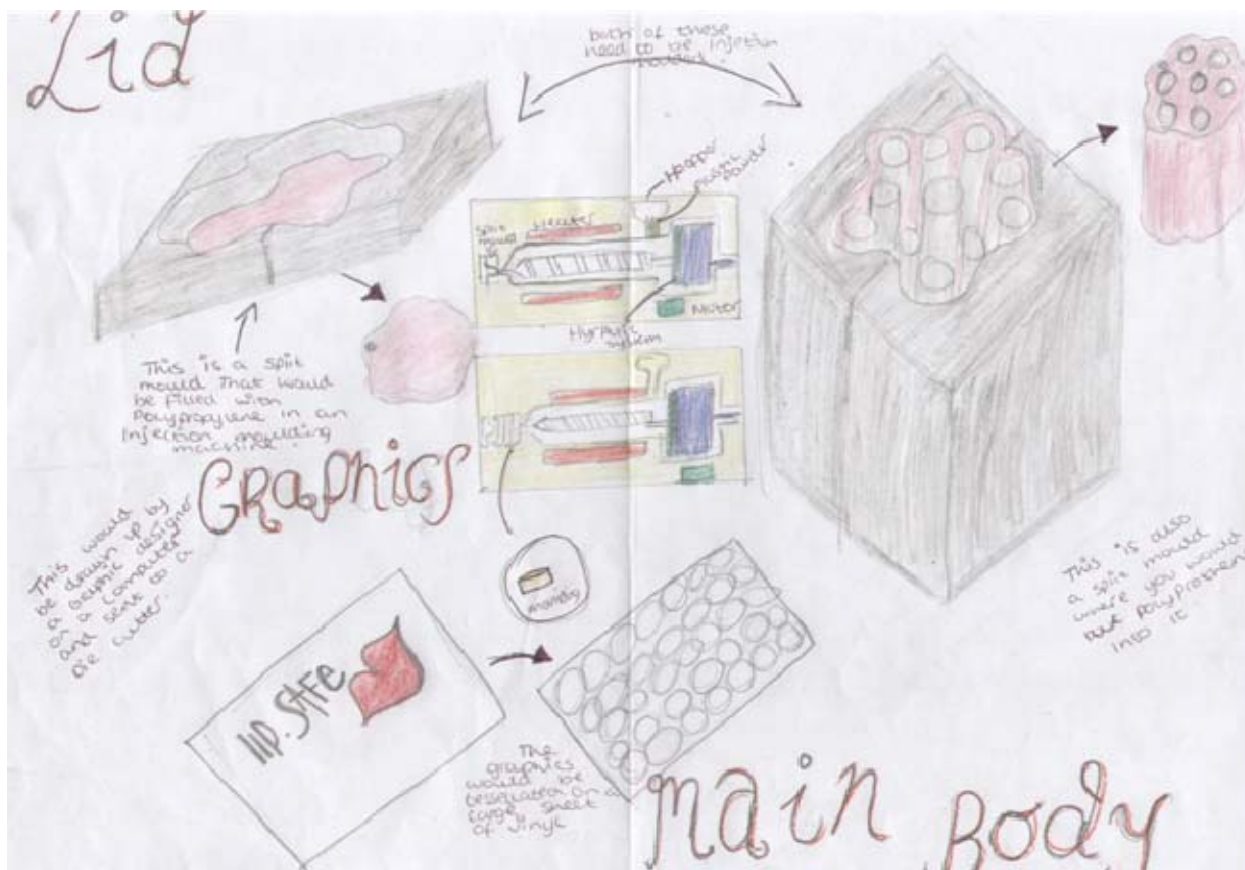
Above is an example of a slide from a students' portfolio that is progressing in the right direction.

The marketing presentation section continues to improve with centres now approaching this in a far more innovative way. High performing candidates produced videos or placed their product in a promotional context. Weaker candidates produced poor quality posters.

The marketing presentation is an opportunity for the candidates to promote their ideas through an innovative presentation to a prospective manufacturer, supplier, buyer or retailer of the product.

Good examples seen include TV commercial type videos, adapted pages from magazines, with the product cut and pasted onto the page; web based selling; billboards and fake celebrity endorsements, to achieve the higher marks however, the end result must be realistic and professional in appearance and an explanation for the idea of the marketing strategy.

Marketing
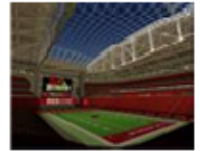
My constructed promotion offer

This is what my toothpaste advertisement would look like. It is eye catching because it is a bright yellow colour and it would make the children's parents want to buy it as well as the children.

Collect 5 tokens with £5 and bring this to your local toy store to receive your tooth brush holder.
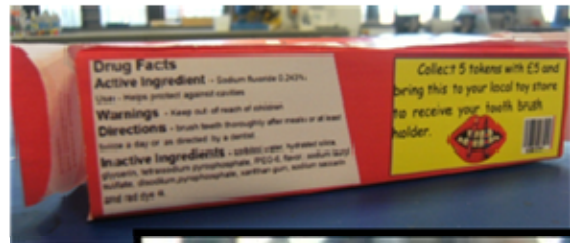
B802 Designing and Making Innovation Challenge

General Comments

It is clear that candidates have enjoyed the work they have carried out during the 'challenge' with many students reflecting positively on their experience. All four of the challenge themes have been selected by candidates with 'A day at the beach' being the most popular. The Innovation Challenge continues to be appropriate to candidates of all abilities with the overwhelming majority of candidates completing all sections of the workbook.

Administration

Examiners have reported fewer problems due to centre administration errors in this session. It is, however, important that teachers make examination officers aware that the examination takes place in three separate stages and that workbooks should not be sent to examiners until all of the three stages are complete. To avoid delays and unnecessary 'missing script' investigation work for both OCR and the Examination Centre it is important that examination workbooks are posted to examiners as soon as the 'Time to Reflect' activity has been completed.

Centres are reminded of the requirement to submit details of the dates of the Innovation Challenge to OCR using the VAF form. A number of centres failed to submit this form before the given deadline this session.   Copies of the form are available on the OCR website – www.ocr.org.uk.

The Innovation Challenge is designed to take place within a time window of the 10th January to the 25th January. Centres are not allowed to run the Challenge outside of this window. For the June session the window has been extended to 1st May – 23rd June.

All materials relating to examinations sent from OCR to centres will be dispatched to the examinations officer. It is important that colleagues check with the examinations officer that they have received all relevant and most up to date information prior to starting the Innovation Challenge activity.

Examination notices must be displayed in the area where the examination is to take place and an invigilator should be present. Students should work in silence unless otherwise instructed by the teacher script.

Running the Challenge

Centres are reminded that the role of the teaching colleague is that of a facilitator and not that of a normal classroom teacher. They are there to provide access to materials, monitor health and safety issues and read the teacher script to candidates, elaborating and explaining where this is indicated within the script.

Teaching colleagues and support staff must not give advice to students about the design/manufacture of their prototype product or cut materials to correct shape or dimension for students. It must be made clear to all candidates that this is an examination and we are assessing the individual student's designing and modelling capability.

Photographs
Examiners have reported concerns about the quality of photographs from some centres. Problems include: photos being printed at low resolution, photos being printed that are too small (approx postage stamp size), photos being printed on printers that are low on ink and photos that do not clearly focus on the model.
Photographs form an essential part of the assessment process. Photographs must be good quality colour images that are of an appropriate size to fit into the space provided.
The addition of a card with the candidates name within the photo aids the return of photos to students. Centres are reminded that four "teacher" photographs is the minimum required. Additional photos can be added to the workbook. This is particularly important if it is necessary to show other parts or views of an artefact to fully illustrate the final outcome.
It is recommended that if candidates wish to annotate photographs that a second print is produced and stuck into either the appropriate section of the workbook or into the 'additional space' and clearly labelled and then annotated.
Candidates should be encouraged to stick photos into the workbook as they are printed.

Completion of the workbook
Examiners have again reported difficulty in understanding student's work where either blunt pencils, highlight pens or gel pens have been used for written work. Please advise candidates of the need for all of their work to be legible.

Security of Workbooks
Centres are reminded of the importance of appropriate security of all workbooks between the three sessions of the Innovation Challenge. Workbooks must be returned to the examinations officer and should be stored in secure conditions.

Development of design. Evolution through making.

Initial Thoughts
Candidates used a mix of text and drawings to explore the given theme. The majority of candidates produce a range of initial concept ideas and think creatively about the problem and the supplementary information.
Examiners have expressed concern that some candidates approach the challenge with pre-conceived ideas and fail to respond to the given supplementary information. This results in candidates failing to gain the marks that are available for doing so.
Candidates should be encouraged to take risks and think creatively about the design problem.

Briefs
Design Briefs identified by candidates continue to be poorly written. Design Briefs are often too prescriptive with many candidates confusing the design brief with the specification. Candidates should be encouraged to write clear and precise design briefs that offer scope for creativity.

User/Clients
The majority of candidates identified appropriate user groups for their products. Higher performing candidates gave clear consideration of their user group whilst undertaking the design activity making clear reference to the target user and user needs.

Specifications
Specifications from many candidates were disappointing and often failed to go beyond the information given in the challenge theme or contained only vague, generic points which could apply to almost any product. It is essential that candidates understand what a specification is and how to write a specification if they are to be successful designers. They should be encouraged to write detailed, justified, specific points about their proposed design. A bullet pointed format was seen to be of assistance to higher performing candidates.

Ideas
Students used a mix of drawings, text, annotation and occasionally modelling/photographs to show their ideas. Lower scoring candidates reproduced the initial thoughts from box 1 of the challenge activity and disregarded both the design brief and specification from boxes 3 & 4. Higher performing candidates produced a range of creative ideas that clearly related to their design brief, specification and potential users. Drawings of both full designs and parts of designs were provided along with detailed annotation relating to materials and construction methods. Development of the design from the 'initial thoughts' was clearly evident. Designs were 'rendered' to enhance communication.

Supplementary Information
It is important that the theme sheet is read through with the candidates and the appropriate challenge identified along with the supplementary information. Marks are awarded for responding to the supplementary information. A number of candidates have failed to respond to the supplementary information given.
High achieving candidates responded well to the supplementary information and gave clear reference and consideration to it throughout their design work.
Centres should be cautious of over preparing students for the examination from the pre-published theme sheets. Examiners felt that on a number of occasions candidates approached the examination with pre-conceived ideas. This obviously limits the candidate's opportunity for responding to the supplementary information.

Communicating information through sketches, writing and photographs

The standard of design communication was generally good. Candidates presented their ideas using a range of annotated drawings and text. Higher performing candidates gave different views of objects or parts of objects and clearly communicated their design thinking through the use of notes and annotation. Examiners felt that many candidates work could have been enhanced with the use of rendering techniques and that centres should encourage candidates to be more adventurous in their forms of communication.

Written communication is generally good but many candidates fail to use technical vocabulary when this is appropriate.

Materials, Components, Processes, Techniques and Industrial Practice

Examiners have reported that the majority of centres have prepared their candidates well for this part of the examination. Candidates from these centres clearly understood that they were making a model rather than a 'final' product. Appropriate materials were supplied by these centres for candidates use. These materials included foam, foam board, card, balsa, modelling clay, mechanism kits, polymorph, etc.
It is essential that during the product design course students undertake modelling activity in order to develop their manufacturing skills and knowledge of modelling materials.
Examiners reported that some candidates whose design work was of a good standard were limited by the materials supplied by their centres. Sheet materials such as MDF and Plywood are often unsuitable for modelling. These materials often limit the candidates ability to model designs appropriately and/or impact upon the candidates design work. Where these materials were used, the candidates' work was often incomplete because candidates were trying to manufacture 'final outcomes' rather than 'prototype products'. Examiners have also noted that some centres have used 'junk' materials such as yoghurt pots, ice cream tubs and washing powder boxes for modelling. The use of these materials often results in a poor quality model/prototype.
Candidates must produce their own models. Using existing products such as a child's toy and simply sticking wheels to it will not gain high marks.

Higher achieving candidates considered the choice of materials and components available and identified the most appropriate materials for the manufacture of their product demonstrating adept use of these materials. They completed their models to a high standard and the model they produced accurately reflected their design.

Analysis of ideas, models and prototypes

Peer Evaluation
The majority of candidates planned for the presentation and recorded the outcome. Clear evidence was seen of candidates using the feedback to further develop ideas. Occasionally, candidates failed to record the feedback or planning for this activity.

Development of ideas
Design development varied considerably between centres. Higher achieving candidates show clear development of their ideas between box 1 'initial thoughts' and box 5 'initial ideas'. They also show development between box 5 'initial ideas' and box 8 'developing your idea'.
It is important that candidates use notes or annotations to show how they are developing their design towards an optimum solution that satisfies the design brief, specification and needs of the user. Producing a model of the initial idea or redrawing the initial idea does not show development of the design and therefore will gain no marks for design development.

Evaluation
Many candidates produced detailed evaluations of their prototype product. Higher performing candidates considered each of their specification points and completed the 'fast forward' section with detailed information about the future product.

Reflection
Examiners have reported that responses in this section of the workbook have improved. Students are correctly focussing on the product design rather than the model they have produced. It is essential that students use the 30 minutes available to read through their workbook and reflect upon the activity they undertook. They should identify strengths and weaknesses in the design and suggest detailed alterations/improvements. Where design alterations are proposed these should be drawn and clearly communicated. Cursory written comments will not attract high marks.

B804 Designing Influences

Overall the paper provided a suitable challenge to the students. The vast majority of candidates found the paper fully accessible and were able to attempt every question. In nearly all cases it was clear that candidates had carried out their research into designers and design eras. As with previous sessions, the design section was well answered and in general an improvement upon previous examination sessions. The development section was significantly improved with candidates systematically developing the idea as well as evaluating their ideas against the specification. Once again, the weakest feature of the design question is the four specification points.

Question 1. Computer mouse.

Where Candidates have been well practiced in the skills of product analysis, the identification of two design features was straightforward, and the majority of answers correctly identified the buttons, the scroller, the comfortable hold and the ease of use.
Unfortunately, a large number of candidates failed to correctly read the second part of the question, and gave answers such as plastic, metal and rubber, rather than properties such as durable, lightweight, water resistant and easy to mould.

The health and safety risks associated with using a computer were generally well known: most candidates scoring at least one of the two marks available. This was one area where the more perceptive and socially aware candidates were able to identify health issues associated with long periods of inactivity, personal issues such as identity theft, and the risks for young people of communicating with strangers.

Some candidates did not read the last part of the question carefully enough and gave answers related to the design of digital products (with references to iPods', touch screens and video facilities) rather than the changes in the way designers work (using CAD/CAM, 3D modelling, animations and simulations, internet searches for research, etc.).

It is very important for candidates to be well practiced in reading examination questions and determining the point of what is required in the answer.

Question 2. Tee shirt.

The reasons for the popularity of Tee shirts were very well attempted with most candidates scoring the two marks for answers such as comfortable, available in a range of sizes/colours/textures/designs, affordable, easy to wash and to dry, readily available and versatile.

In the context of GCSE D&T, the term 'sustainable' is used to describe a material that comes from a sustainable, lasting source that will not run out, because it can be re-grown and replenished, without causing any damage to the environment. Some candidates gave answers that referred to the 'staining' of the cotton, while other candidates gave answers that referred to the Tee shirt lasting a long time without wearing, tearing or losing its shape.

Most candidates were able to provide the name of one of the secondary colours, and a majority of candidates were able to explain that mixing two primary colours made a secondary colour.

The promotional use of Tee shirts was generally well attempted. Candidates were able to explain that Tee shirts are a cost effective way to advertise with a product that people wear every day and enjoy wearing for something they believe in or support. Also that Tee shirt promotions can have a lot of impact because the message is seen over and over again, often on young fashionable people.

Question 3. Design features of a modern clothes iron.

This question is always popular and well attempted.

Most candidates were well able to identify three successful features of the modern clothes iron related to the use of steam, the temperature settings, the ergonomic handle, the insulation qualities of the plastic, and the convenience, safety and ease of use.

Explanations of why the identified features make the clothes iron successful were also well attempted with most candidates scoring 3 or 4 of the marks available. So the adjustment of temperature setting ensures that delicate fabrics and woollens can be ironed at a cooler temperature, while jeans can be creased with the steam and the hotter setting.

Explanations of why the basic design of the clothes iron has changed little over the years proved discriminating. Many candidates just said that the original designers got it right and that there was little to improve on. The more perceptive responses referred to the need for a flat ironing plate to cover large areas with a pointed front to get into small areas, and a handle that was 'over' the plate, allowing for one handed horizontal grip with both left and right hands for comfortable use over extended periods.

Comparisons of examples of modern and traditional products that perform the same basic function should provide exciting teaching opportunities in product analysis. Past examination papers can provide appropriate examples, however many centres are coming up with their own ideas based on familiar items found in the kitchen, the bathroom and the toy box.

Question 4. Trendsetter and Iconic product.

Alec Issigonis, Andy Warhol and Yves St Laurent had been well researched and were well represented in many of the answers to this question. Infra-red and vegetarianism were equally well researched but less popular.

In preparing for this question, candidates need to be very clear that marks will be awarded in 4a for information about the Trendsetter and that marks will be awarded in 4b for information about their Iconic product. Knowledge about the Mini Cooper, the Kaftan and the Campbell's soup painting gain credit in 4b. Knowledge of the important influences (other than the given Iconic product) and the long-term legacy of the Trendsetter have to be explained in 4a.

Candidates have to be especially careful to avoid repeating the same information in 4a and 4b, and to ensure that they give information in 4a that focuses on the Trendsetter rather than the Iconic Product.

More and more candidates are choosing to study and research two Trendsetters and two Iconic Products and in some ways this has a lot to recommend it. It allows the candidate more scope when completing their examination. Some Trendsetters have much more interesting achievements to consider (Andy Warhol for example), and some Iconic Products have a greater number of innovations to reveal (the Mini Cooper for example).
Also, by studying two Trendsetters, a candidate then has a choice when answering the design question.

Question 5. Design.

The formulation of the four specification points at the beginning of this question continues to be of concern to the examiners. Many candidates score no more than one or two marks.

For full credit, candidates must provide four discrete points that have **not** already been given in the question paper, so references to the Trendsetter (eg Warhol), or the Iconic Product (eg

Campbell's soup painting) will gain no credit. References to the requirements outlined in the need (eg 'point of sale', 'display', 'Warhol', 'exhibition') cannot gain credit.

Candidates have to use their knowledge of the Trendsetter and the Iconic Product, together with their analysis of the requirements of the need to formulate 'new' points.

For example:
- The design must use repetitive images of an everyday object.
- The design must use large lettering that is easy to read from 10 metres.
- The display must be easy to erect and take down.
- The display must be made of lightweight materials so that it is easy to carry.

Generic points (eg strong, bold comfortable) and negative points (eg no sharp edges, not too heavy, no loose bits), can gain no credit.

Clearly, the purpose of the specification points is to help the candidate focus their thoughts on viable design ideas. Time spent 'thinking before writing' the specification points, will not only improve the mark score, but also help the candidate improve their performance in **all** of the other sections of this question.

To score well for the design ideas part of the question, candidates must provide a **range** of different ideas, each with explanatory **notes** (rather than just labels), and with some indication that some aspects, of some of the ideas, address at least two of their **specification points**.

Typically, candidates score 3 or 4 of the available marks for design ideas.
In order to move beyond two marks in the development of ideas part of this question, candidates must provide clear evidence, in the form of **sketches** and **notes**, of developmental activity and decision making.

For the final part of question 5, it is important for candidates to provide confirmed details of their final solution including references to materials, ingredients or components, with sizes, dimensions or quantities, together with joining or mixing techniques, and indications of tools and equipment that might be appropriate.

The notes and explanations of how the final solution meets each of the specification points are not generally well attempted. Candidates will often just say, for example, that "*my idea meets specification point 2*". For the award of a mark, it is necessary for the candidate to explain **how** the solution meets a particular specification point, for example, '*the lettering on the display is 150mm. high so it should be clear to read from 10 meters, and 500mm wide foam board will be used for the display so it should be light enough and small enough to be easily carried under the arm.*

This particular requirement for a justified evaluation of a design idea is a key skill in Product Design as it permeates other units in the qualification. It is also a very useful 'life skill' for when the candidates become consumers. The skill does have to be rigorously taught, until it becomes part of a completely natural approach to evaluating products.

Some excellent examples of responses to Question 4 and 5

4b

> Discuss the impact this product has had on society.
> Make specific reference to design, innovation and function.
>
> The Campbell's soup painting has had a very great effect on society since it was first exhibited in 1962. There were 32 different paintings, all a different variety/flavour of the soup. This was such an iconic painting because the idea was innovative and new because it was just a simple soup can. This related to society because almost everyone would have had a tin of this soup in their cupboards at this time so it made people feel as though they owned their own piece of art. This caused a lot of controversy and debate when it was exhibited, triggering the question 'what is art?' [6]
>
> The design of the soup can was also innovative as it was simple, flat and perfectly done. It was produced using silk screen printing for the majority and the minor details were hand painted for perfection. This was a graphic technique that Andy Warhol used from his job to make it memorable and simple. [Total: 10]

This answer is concise and contains a good variety of points each one well explained. The candidate has managed to focus the answer on the iconic product and not the trendsetter, this is something that most candidates find very difficult.

Q5a

> (a) Identify four important design specification points for your chosen design situation.
>
> 1 It must include the correct proportions of the following food groups: fibre, protein, carbohydrates, fats + sugar to be healthy. [1]
> 2 It must reflect vegan values so not include any meat or animal produced products to be classed as vegan. [1]
> 3 It should look and smell appetising and well presented so people will want to buy/eat it. [1]
> 4 It will be well-cooked with good ingredients so the taste will be good and it will be safe to eat. Plus it will include at least two courses so could be served at a restaurant [1]

Four specific points that relate to the brief.

Q5b

A wide range of ideas with notes that show how the candidate is addressing the issues raised in the brief and the specification.

Q5c

This page shows a very active mind that is developing the solution. The comments are not just labels; they are broadly evaluative in nature and relate well to the specification points.

Q5d

Given the time available for this question, this is an excellent response. There is good detail of the final solution plus evaluation of the solution against the specification points.

Grade Thresholds

General Certificate of Secondary Education
Design and Technology (Product Design) (J900 J901)

January 2010 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	u
B801	Raw	90	81	69	57	46	40	34	29	24	0
	UMS	120	108	96	84	72	60	48	36	24	0
B802	Raw	60	53	47	41	36	32	28	24	20	0
	UMS	80	72	64	56	48	40	32	24	16	0
B803	Raw	90	78	68	58	48	41	34	28	22	0
	UMS	120	108	96	84	72	60	48	36	24	0
B804	Raw	60	50	43	36	29	24	19	15	11	0
	UMS	80	72	64	56	48	40	32	24	16	0

Specification Aggregation Results

Overall threshold marks in UMS (ie after conversion of raw marks to uniform marks)

	Maximum Mark	A*	A	B	C	D	E	F	G	U
J900	200	180	160	140	120	100	80	60	40	0

	Maximum Mark	A*	A	B	C	D	E	F	G	U
J901	400	360	320	280	240	200	160	120	80	0

The cumulative percentage of candidates awarded each grade was as follows:

	A*	A	B	C	D	E	F	G	U	Total No. of Cands
J900	0	8.1	35.1	59.5	75.7	86.5	94.6	100	100	59
J901	33.3	66.7	100	100	100	100	100	100	100	3

Statistics are correct at the time of publication.

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