Contents

GCSE in Design & Technology (Product Design) Teachers' Guide

1. Introduction 2
2. Course Structure 3
3. Unit 2 Controlled Assessment 4
   Briefs 4
   Completion of Controlled Assessed Task 5
   Frequently Asked Questions 25
4. Written Paper 28
   Command Words 28
   Content and Examples 29
5. Year Planner 60
6. Book List 61
7. Useful Websites 62
The WJEC GCSE in Design and Technology (Product Design) specification has been modified and updated for delivery from September 2009. The first award is in June 2011. The specification can be delivered and assessed in centres throughout the UK.

The revised subject criteria for GCSE in Design and Technology (Product Design) issued by the regulators have necessitated the need for some change to the structure and content of the specification.

It is the intention of this Guide to be but one of several ways in which WJEC provides assistance to teachers delivering the specification, sitting alongside the specimen papers and INSET conferences.

WJEC provides the following as part of its support for all GCSE specifications:

- Examiners' reports on each examinations series
- Free access to past question papers via the WJEC secure website
- Easy access to the specification and other key documents on the main website
- Regular INSET delivered by Chief Examiners
- Easy access to both the Subject Officer and to administrative sections

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Subject page http://www.wjec.co.uk/index.php?subject=14&level=7
2. COURSE STRUCTURE

<table>
<thead>
<tr>
<th>Written Paper Unit 1</th>
<th>Controlled Assessment Unit 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Unit 1 Written Paper

The Basics

- It is now one focus area specific examination.
- It is split into two sections.
- Section A will have questions specifically about the over-arching principles of Design and Technology and the Design Process.
- Section B will have questions about the respective focus area.
- It is now a 2-hour examination.
- The students will need extended practice to be able to complete the examination.
- The examination can be taken in year 10 and/or year 11; the best mark being carried forward.

Unit 2 Controlled Assessment Task

Requirement

- It is to be completed in the second year of course.
- The Project Briefs are set by the board. (Principal Examiner for each focus area sets the briefs.)

The Basics

- This replaces the coursework element of the present course.
- Start to think in terms of Controlled Assessment Task, not project work.
- In simple terms, a design and make task in 30 hours.
- All the work is to be done in school.
- It is work that is done under supervision.
- These will change each year.
- The work is to be done in the controlled assessment workbook.
- The controlled assessment workbook is to be downloaded from the WJEC website.
- The controlled assessment workbook is A3 in size.
- There is a space on each page for a comment and mark.
- The work will be moderated each year.
UNIT 2 CONTROLLED ASSESSMENT

This section relates to Unit 2, the Controlled Assessment Task (CAT)

Worth 60% of the overall mark. 30 hours.

Unit 2 Controlled Assessment

- The three project briefs will be issued to schools in the September of the final year of the course.
- Each year one of the briefs will change.
- The briefs are designed to be broad enough to suit the diverse interests of Product Design candidates.
- Candidates can interpret the briefs to suit their particular interests. They must, however, carry out appropriate research prior to starting the controlled assessment.
- Candidates must provide details of the results of their research leading to a final design brief (page 1 CAT).

Briefs

Teachers or candidates, in consultation with their teachers, should choose one of the Briefs set by the board.

The examples below typify the briefs that will be set.

- Brief 1: Cosmetics - Product Design
  A famous manufacturer is making a new perfume. Design the bottle, packaging and promotion for this.

- Brief 2: Self-Assembly
  Design a new flat pack design and its instructions for an item that can be used around the home. All good flat pack design comes with easy to understand instructions.

- Brief 3: Electronics/Electrical – Product Design
  Design a new stylised electronic product that reflects a chosen theme or designer. The product will need some form of branding to accompany it.
Controlled Assessment Task

- It is a requirement of the specification that candidates complete a **30 hour design, make and evaluate task**.

- Teachers are required to monitor and verify that the time limit is adhered to and that the contributions of individual candidates are recorded accurately and that plagiarism does not take place.

- **Candidates will not gain additional credit by exceeding the time limit.**

- The task can be carried out in the normal classroom/workshop environment.

- Candidates are allowed **supervised access** to resources that may include information gathered outside the 30 hours of controlled assessment time.

- Candidates may gather research/inspirational material prior to or during the assessment period and this can be referred to during the task but this material is not to be included in the material to be assessed.

- Candidates may collaborate/confer with others in relation to the task but all **assessed material must be the candidates' work only**.

- The supervising teacher can give candidates **limited guidance** during the task in order to clarify what is to be done and to ensure that safe working practices are adhered to.

- All graphical and written work entered for this controlled assessment must be submitted on the pre-printed pages which are available for download from the WJEC website.

- **The task must not exceed the 14 A3 pages provided.** Candidates are free to use ICT applications where they are appropriate.

- It is the responsibility of the centre to ensure the reliability and authenticity of all work presented for this controlled assessment.

- Teachers and students will be required to sign a declaration that all work presented is the work of the candidate alone.
The Controlled Assessment Task is divided into two sections.

- **Section A** is concerned with designing the product.

  Marks will be awarded for:

<table>
<thead>
<tr>
<th>Task</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of the Task</td>
<td>5</td>
</tr>
<tr>
<td>Writing a Design Specification</td>
<td>5</td>
</tr>
<tr>
<td>Generating Ideas</td>
<td>10</td>
</tr>
<tr>
<td>Developing and Modelling a solution</td>
<td>25</td>
</tr>
<tr>
<td>Communicating the Final Solution</td>
<td>10</td>
</tr>
<tr>
<td>Demonstrating Creative Thinking</td>
<td>5</td>
</tr>
</tbody>
</table>

- **Section B** is concerned with planning, making and evaluating the product.

  Marks will be awarded for:

<table>
<thead>
<tr>
<th>Task</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning the make</td>
<td>10</td>
</tr>
<tr>
<td>Making the Product</td>
<td>90</td>
</tr>
<tr>
<td>Evaluation of the Product</td>
<td>10</td>
</tr>
<tr>
<td>Suggesting Improvements</td>
<td>10</td>
</tr>
</tbody>
</table>

When completing the Controlled Assessment Task candidates should:

- Contextualise the chosen brief.
- Design creatively by generating, developing, planning and communicating ideas.
- Make products by working safely with tools, equipment, components, materials and ingredients.
- Apply systems and control. CAD/CAM, digital media and new technologies appropriate to the focus area.
- Analyse and evaluate processes and products.
Controlled Assessment Workbook

Section A

Instructions to Candidates and Centres

- Print these pages before you start:
- Read the instructions with your candidates. (You can do this before the control mechanisms apply.)
- Use these pages only.
- Do not add research.
- Each page is timed.
- Do not add pages, they will not be marked.
- Mark each page as you go.
Initial Brief
From the list of 3 given each year.

Research
Target market, problem, existing products.

Final Brief
Written to suit the task.

Mark | Description of Attainment
--- | ---
0 | No analysis presented.
1 | There is a very basic analysis of where the product fits in the market place together with a limited evaluation of a similar product. The work presented shows little evidence of prior research and preparation. A simple brief may be evident.
2 | There is a basic but appropriate analysis of where the product fits in the market place together with a basic evaluation of a similar product. The work presented shows limited evidence of prior research and preparation. A simple brief is evident.
3 | There is a good analysis of where the product fits in the market place together with an evaluation of a similar product. The work presented shows some evidence of prior research and preparation. A clear brief is evident.
4 | There is a very good analysis of where the product fits in the market place together with a detailed evaluation of a similar product. The work presented shows good evidence of prior research and preparation. A well-worded brief is evident.
5 | There is a comprehensive analysis of where the product fits in the market place together with a very detailed evaluation of a similar product. The work presented shows clear evidence of detailed research and preparation. A clear and appropriate brief is evident.
Design Specification (5 marks) (1 page)

This is an opportunity for candidates to present a detailed design specification of the intended product.

**Mark**  **Description of Attainment**

0  No specification presented.

1  A design specification comprising a list of basic attributes for the product. The specification shows little or no links with the analysis of the task. Information is poorly organised, little or no use of technical language/vocabulary. Written communication is limited in terms of organisation of material, with many errors of grammar, punctuation and spelling.

2  A basic design specification comprising a list of relevant attributes for the product. The specification shows superficial links with the analysis of the task. Information shows evidence of structure, limited use of technical language/vocabulary. Written communication is limited in terms of organisation of material with some errors of grammar, punctuation and spelling.

3  A good design specification comprising a prioritised list of attributes for the product presented under appropriate headings. The specification illustrates clear links with the analysis of the task. Information is organised, basic use of technical language/vocabulary. Written communication is adequate in terms of organisation of material, with some errors of grammar, punctuation and spelling.

4  A comprehensive design specification comprising a prioritised list of attributes for the product presented under appropriate headings. The specification demonstrates strong links with the analysis of the task. Information is well organised, good use of technical language/vocabulary. Written communication is good, presenting mainly appropriate material in a coherent manner, with few errors of grammar, punctuation and spelling.

5  An excellent design specification comprising a prioritised list of attributes for the product presented under appropriate headings. The specification is well founded in the analysis of the task. Information is well organised, presented in a highly appropriate manner, very good use of technical language/vocabulary. Written communication is good, presenting appropriate material in a coherent manner, and largely error-free.

- **Specification**

  Corporate Identity – Logo, packaging, instructions, presentation board, etc.

  Look at either a functional or non-functional product.

  Cover points as in previous 'specs'- safety, materials, size, aesthetics, etc.
**Initial Ideas**

Need 4 initial ideas.

Annotated – link to spec.

Good use of media ideal.

CAD would be nice but could prove costly for some candidates on the time constraints.
- **Best Idea**

  Sketch an idea that you feel will answer the brief.

  Well Annotated.

  Explain why you think it is the best.

  Views of others – 2 partners will give their opinion on your choice. +ve & -ve.

  Final idea taking on board your partners' ideas or not.
Development and modelling  (25 marks)

This is an opportunity for candidates to choose their best idea and to develop it into its final form. This section is an opportunity for candidates to use appropriate ICT. Marks are awarded for evidence of development under the headings shown. Candidates must offer options and make reasoned decisions under each heading. Evidence of these areas may be presented in integrated form across the 5 pages available.

Form/Style/Function

<table>
<thead>
<tr>
<th>Mark</th>
<th>Description of Attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No development of form presented.</td>
</tr>
<tr>
<td>1</td>
<td>Limited evidence of the form/style being developed or modelled. An alternative shape or style may be evident. There is no evidence of decision-making.</td>
</tr>
<tr>
<td>2</td>
<td>Some evidence of the form/style being developed or modelled. Several options are presented. There is evidence of decision-making but with little reasoning offered.</td>
</tr>
<tr>
<td>3</td>
<td>Clear evidence of the form/style being developed or modelled. Several options have been offered. There is evidence of reasoned decision-making.</td>
</tr>
<tr>
<td>4</td>
<td>Good evidence of the form/style being developed and modelled. Several appropriate options have been offered. There is clear evidence of informed decision making.</td>
</tr>
<tr>
<td>5</td>
<td>A variety of forms/styles have been presented and the shape and form of the product have been developed and modelled in a progressive way. A final decision based on sound reasoning has been made.</td>
</tr>
</tbody>
</table>

- Develop

Look at the following points:

Form, appearance, style.

Suitability, function.

Think about your target market.

Modelling your idea could be very useful at this point.
• Develop

Look at the following points:

Materials and components needed.

Explore material possibilities.

Do you use 'standardised' parts or are 'customised' parts needed.
Develop

Look at the following points:

Materials and components needed.

Explore material possibilities.

Do you use 'standardised' parts or are 'customised' parts needed.
Develop

Look at the following points:

Sizes, quantities and costings needed

Think about alternative quantities and or sizes for your manufactured item.

Are there size constraints?

Is a certain material/component available in the size needed?

Use of ICT – Spreadsheet?
Finish/Quality

<table>
<thead>
<tr>
<th>Mark</th>
<th>Description of Attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No development of finish/quality presented.</td>
</tr>
<tr>
<td>1</td>
<td>Limited evidence of the development of finish/quality. A suitable finish may be offered. There is no reference to quality control. There is no evidence of decision-making.</td>
</tr>
<tr>
<td>2</td>
<td>Some evidence of the development of finish/quality. An alternative finish is offered. There is brief reference to quality control. There is evidence of decision-making.</td>
</tr>
<tr>
<td>3</td>
<td>Some evidence of the development of finish/quality. Alternative finishes are offered. There is reference to aspects or quality control. There is evidence of decision-making.</td>
</tr>
<tr>
<td>4</td>
<td>Clear evidence of the development of finish/quality. Alternative finishes are offered. There is reference to aspects of quality control. There is evidence of reasoned decision-making.</td>
</tr>
<tr>
<td>5</td>
<td>Full and clear evidence of the development of finish/quality. A range of alternative finishes is offered. There is reference to a variety of quality control issues. There is evidence of well-reasoned decision-making.</td>
</tr>
</tbody>
</table>

**Develop**

Look at the following points:

Finish and quality issues.

Look at QC and or QA – highlight particular areas of concern.

Remember – there are two items which need to be made.
Presentation Drawing

You will need to create a presentation drawing(s) of your final item.

Possible methods: Isometric, Perspective, Cut away, Exploded – to name but a few.

High quality Rendering is important – try to convey the material you are going to use.

Remember – There are two items need to be made (Corp ID and Item).
Technical Details

You will need to create a technical drawing(s) of your final item.

Possible use of CAD. link to ProDesktop for p10.

Dimensions, parts needed, etc.

Remember – there are two items which need to be made (Corp ID and Item).
Up to five marks can be awarded for imaginative and creative thinking in the development of the product and for the presentation techniques used to communicate ideas.

This mark is awarded at the end of section A.
Section B

- Section B to be completed in about 20 hours.
- Remember this includes the manufacture time also.
• **Planning**

Possible use of Flow Charts, Diary, Production Schedule.

Realistic time estimate used.
*(A guide of 16-17 hours making)*

Remember – there are two items which need to be made (Corp ID and Item).
**Evaluation**

Compare to the final brief.
(Good and bad points – be analytical)

Link the specification points.

Remember – there are two items which need to be made (Corp ID and Item).
Evaluation

Look at the possible improvements in both the design and manufacture.

Think about the intended user.

Think quality.

Remember – there are two items which need to be made (Corp ID and Item).
• This page is optional and is provided for candidates to provide evidence to back up their manufacturing.

• **Most** candidates will leave the page **blank**.
Frequently Asked Questions

What candidates can and cannot do before and during the controlled assessed task (CAT)

Extraction from the specification

- Candidates are allowed **supervised access** to resources that may include information gathered outside the 30 hours of controlled assessment time.

- Candidates may gather research/inspirational material prior to or during the assessment period and this can be referred to during the task but this material is not to be included in the material to be assessed.

Some questions you may have:

- Can candidates gather information/research before and during the task?
  
  Yes, this will help them enormously to develop and create answers to the brief.

- How much information can they take into the CAT?
  
  As much as they like, though too much information can be a waste of time. The candidates will spend all their time looking for information to use rather than focussing on the task.

- Can they gather information between CAT lessons?
  
  Yes, and they can use it in their next session.

- Will they get marked for gathering the information?
  
  No, the research information is to support/develop their creative ideas and focus their mind on the task.

- Can they add information to their research, such as personal comments?
  
  Yes, we recommend that candidates do develop their own sketch.

- Are they allowed to sketch any creative ideas as they gather their research?
  
  Yes, we are looking for quick sketches **not full blown annotated detailed ideas**.

- Can they ask for advice outside of CAT sessions?
  
  Yes, giving candidates a direction and help them achieve their potential is part of your role. However completing or doing the candidates work for them to copy is not acceptable.

- Do they all have to work at the same time?
  
  No, how you manage your 30 hours with your candidates is your responsibility.
• What if a student misses a CAT session, is he/she penalised?

_Certainly not, they can always make up their time during the academic terms. (This is one of the reasons we designed a 30 hour task; if we went for a 40 hour task you may have found yourself doing CAT work outside of lesson times.)_

• Are the candidates allowed to talk during the CAT session?

_Yes, we are even asking them to use the views of other pupils in the evaluation of their work._

• What is a controlled environment?

_This is where the candidates are under your guidance in a controlled room. i.e. the candidates time, work is being monitored. A CAT session must be timetabled._

• Can the candidates ask for advice during the controlled session?

_Yes, teachers may offer general guidance to keep them on track._

• Are computers allowed?

_Yes, no problem._

• Can they print their work outside of timetabled CAT sessions?

_Yes, as long as you are monitoring their actions and the work is tracked. i.e. the candidates are not allowed to add information/diagrams etc to their work. The print out must be what they have done during the timed conditions._

• Do they all have to work on the same element of the work book?

_No, candidates can work at their own rate._

• Who is responsible for the workbook?

_You the teacher. It must be treated like an examination paper. You give them their work at the start of the CAT session and you collect it in at the end._

• Can materials be prepared before the CAT session?

_Yes._

• Is drying time/cooking time part of the timed conditions?

_No, we do not want to penalise a student if he/she has painted, prepared a trial recipe and cannot work on an artefact._
• What if a student has missed a considerable amount of time due to illness or family problems?

   The centre must apply, as they have always done, for special considerations as set out in the JCQ documentation sent to centres.

• Can the candidates do their practical work at home?

   Definitely not.

• Are support staff allowed to prepare work for the candidates?

   No, the work submitted must be the students.

• Can specialist work be done by an outside source?

   NO. The work that is submitted must be that of the student.
## EXAMINATION GUIDANCE/INFORMATION

To assist teachers when preparing candidates for the examination they may like to consider the following information.

This table is intended to define the command words used in papers and explain how they are used and what is expected from the candidate.

<table>
<thead>
<tr>
<th>COMMAND WORDS</th>
<th>MARKS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GIVE STATE NAME</strong></td>
<td>1 Mark</td>
<td>- Questions using these command words will feature in the early parts of questions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- These questions are designed to ease the candidate into the question. They need a simple statement or a short phrase. The do not need elaboration or explanation in the answer.</td>
</tr>
<tr>
<td><strong>DESCRIBE OUTLINE</strong></td>
<td>2 Marks</td>
<td>- Questions using these command words will be commonly used on the papers and will feature in many questions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- These questions ask the candidate to describe something in detail. The answer will be in sentences and/or in a list. There is a need for detail in the answers with elaboration of the answer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Sometimes the question will ask the candidate to use notes and sketches this means that a clearly labelled sketch or diagram will gain the marks.</td>
</tr>
<tr>
<td><strong>EXPLAIN JUSTIFY</strong></td>
<td>3 Marks</td>
<td>- Questions using these command words will be commonly used and will feature towards the end of many questions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- These questions are asking the candidate to respond in detail to the question providing a full answer with an explanation. Full and detailed sentences will be required and will often contain the word &quot;because&quot;. A short phrase will not be acceptable the candidate will need to make a valid point and justify it.</td>
</tr>
<tr>
<td><strong>EVALUATE COMPARE</strong></td>
<td>4 Marks</td>
<td>- Questions using these command words will be occasionally used and will feature towards the end of some questions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- These questions are designed to test, stretch and challenge the more able candidate. The question requires the candidate to make a well-balanced argument involving both advantages and disadvantages. A paragraph or a number of sentences will be required.</td>
</tr>
</tbody>
</table>
The following are general examples of questions with information about how they would be marked.

EXAMPLES

Question 1

Give two reasons why paper is sometimes laminated. [2]

What is required?

- The question is a straightforward “give” question so short statements or phrases are needed and they do not need justification.

Weak answer.

Reason 1: Makes the paper stronger. (1)
Reason 2: (0)

- Here the candidate gives one relevant answer. However they have not attempted to state a second reason. It is vital that all parts of questions are answered.

Good answer.

Reason 1: Makes the paper stronger. (1)
Reason 2: Protects the paper. (1)

- Here the candidate gives two relevant answers. Full Marks.

Question 2

Eight card handles for a carrier bag can be CAM cut from one A3 sheet of card. Describe one advantage to the manufacturer of doing this. [2]

What is required?

- The question asks the candidate to describe in detail an advantage that the manufacturer would gain from cutting more than one handle from each sheet of card.
- Short statements or phrases will not be adequate.
- A clear description with justification using a sentence or sentences is needed.

Weak answer.

It is cheaper. (1)

- Here the candidate gives a relevant answer but the candidate does not give any detail of the advantage.

Good answer.

It reduces the cost of making the handles, as there will be less waste material than cutting one handle from each piece of card. (2)

- Here the candidate gives a full and detailed answer in a well-constructed sentence. Full Marks.
Question 3

Explain why it is necessary to score printed card that is 500 microns thick before folding it to make a package. [3]

What is required?

- The question asks the candidate to explain the reasons for having to score card before folding.
- Short statements or phrases will not be adequate.
- A clear explanation using a sentence or sentences is needed clearly stating a reason and then elaborating the answer with appropriate reasons.

Weak answer

It makes the card able to fold. (1)

- Here the candidate gives a relevant answer but does not give any detail to support their assertion.

Satisfactory answer

It makes the card easy to fold because it makes a dent in the card where it is to be folded. (2)

- Here the candidate gives a relevant answer and does give some detail to support their assertion.
- The detailed reason is rather superficial, as it does not explain WHY the card is easier to fold.

Good answer

It makes the card easy to fold because it makes a dent in the card where it is to be folded. This dent stretches some of the fibres and squashes others into a W shape so that they are ready to fold. (3)

- Here the candidate gives a full and detailed answer in well-constructed sentences.
- They show a detailed understanding of the reasons that allow the process to work. Full marks.
Unit 1 Written Paper, 40%, 2 hours, two sections

This section relates to the content of the specification and the written examination – Unit 1.

The specification has been presented under the following headings:

Section A
Developing, Planning and Communicating ideas
Product Analysis
Sustainability and Legislative issues
Other Designers/Practitioners

Section B
Commercial manufacturing Practices
Knowledge of Materials and Components
Tools, Equipment and Making
ICT, CAD, CAM
Systems and Processes

- The written examination will follow a similar format to the specification.
- There will be 8 questions in total, drawn from each of the sections in the specification. It is inevitable that an overlap of content between sections may occur in some questions.
- One two hour paper – no tiers.
- Questions will be structured to be accessible to all candidates.

Section A
Questions 1 - 4

Product Analysis - Question 1

This part of the specification is about knowing how to analyse a product.

This specification provides the opportunity for candidates, through their chosen focus area to develop a wider understanding of how products are designed and made.

Candidates should be taught to:

Carry out a detailed analysis of a product addressing the following aspects:

- The probable specification for the product.
- The aesthetic appeal of the product.
- The function and/or purpose of the product.
- Quality issues relating to the product.
- The size data of the product.
- The safety considerations of the product with reference to the end user.
- The materials used in the manufacture of the product.
- The scale of manufacture used to make the product.
- The commercial processes used to make and assemble the product.
- Safety considerations of making the product.
- Sustainability and environmental issues.
Typical Examination Question

Question 1. This question is about Product Analysis. It is worth 15 marks.

The photographs show the evolution in mobile phone technology in the last decade.

The questions that follow are about mobile communication.

- 1997 mobile phone has an external aerial
- 1997 mobile phone has a mono colour screen
- 2007 mobile phone has a built in camera and GPS
- 2007 mobile phone has Internet facilities
(a) Before starting to design the new mobile phone a Design Specification was written.

State with as much detail as you can, what you think was the most important Design Specification point for each of the following aspects.

(i) The function or purpose of the mobile phone. [2]
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................

(ii) The target market for the new mobile phone. [2]
........................................................................................................................................................
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........................................................................................................................................................
........................................................................................................................................................

(iii) The safety considerations for the user of the new mobile phone. [2]
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................

(b) The 2007 mobile phone case was made from Acrylonitrile Butadiene Styrene (ABS).

State two properties of Acrylonitrile Butadiene Styrene (ABS) outer casing that make it the most suitable material for the casing.

Property 1: ................................................................................................................................. [1]
Property 2: ................................................................................................................................. [1]

(c) The 2007 mobile phone was made using batch production.

Explain why this is the most suitable scale of production. [2]
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................
(d) The 2007 mobile phone has to appeal to potential customers.

(i) Describe the appeal of the product in terms of one of the following: [2]

fashions trends styles

Circle your chosen criteria above and write your description below.
........................................................................................................

(e) The bar chart below shows the sales of the mobile phone.

(i) State in which month exactly 7000 were sold.
........................................................................................................ [1]

(ii) The total number of sales in the first three months (Jan - March 07) was 6,000 (1,000 + 2,000 + 3,000) and the average sales per month in this period was 2,000.

Calculate the total number of sales in this next four months (April – July 07) and the average sales per month in this period. Show your calculations. [2]
........................................................................................................

........................................................................................................
........................................................................................................
Sustainability and Legislative Issues - Question 2

This part of the specification is about knowing that sustainability and environmental issues, legislation and standards affect and influence designing and manufacturing choices and decisions and use this information in their own designing and making.

This specification provides the opportunity for candidates, through their chosen focus area to develop a wider understanding of sustainability. Centres are encouraged to look at the world we live in and to consider the needs of future generations. Students should be encouraged to think about their approach as designers and manufacturers and also to consider how we can have a sustainable future.

Candidates should be taught to:

(a) recognise why sustainability issues, environmental issues, moral and ethical considerations and economic issues are important;

(b) to take sustainability issues, environmental issues, moral and ethical considerations and economic issues into account when designing and manufacturing;

(c) to recognise social, economic and environmental responsibility; the SIX Rs, that is:
   • rethink
   • reuse
   • recycle
   • repair
   • reduce
   • refuse.

Legislative Issues in Design and Technology

This specification requires candidates to develop an understanding of legislative issues and standards as they affect their designing and making in their chosen focus area and to be able to use the understanding they have gained to guide and assist their decision making during designing.
Typical Examination Question

Question 2. This question is about the general issues of D&T. It is worth 10 marks.

(a) (i) Name a product that makes use of recycling. [1]
........................................................................................................................................................

(ii) Describe how the product you named above makes use of recycling. [2]
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................

(iii) State one advantage of using recycling in a product. [1]
........................................................................................................................................................

(b) (i) Designers of new products think about the SIX Rs. Underline the correct SIX Rs in the list that follows. Two have been done for you. [1]

REMAKE   RETHINK   REUSE   RECYCLE
REDESIGN   REPAIR   REDUCE   REFUSE

(ii) Sustainable design is more than making the product from recycled materials or making it recyclable. Describe one other way in which sustainable products can be designed. [2]
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................
(c) Mass Production of products like the one shown below produces winners and losers.

(i) State one of the winners of mass production of the product and give details of one reason for this.

The winner: .................................................................................................................. [1]

Reason: .................................................................................................................... [2]

........................................................................................................................................

........................................................................................................................................
Other Designers/Practitioners - Question 3

This part of the specification is about knowing about and understanding the work of professional designers and/or professional practitioners within the world of Design and Technology.

The principal examiner will specify two Designers/Practitioners for each examination year. The awarding body will review the two Designers/Practitioners annually. Centres will be informed of the details of each of the Designers/Practitioners two years before the examination is to be taken.

- Candidates should be taught about:
  - The range of the work that each of the designers has produced over time.
  - The features that identify the work of each of the designers.
  - The innovations and/or new ideas that each of the designers has introduced over time.
  - The influence that each of the designers has had on design and manufacturing.

- Candidates and teachers need to be aware that a question on this topic will appear on the Written Examination Paper.

- The question on Other Designers/Practitioners will require an answer that is a piece of continuous writing.

- Marks will be awarded for knowledge of the designers.
Typical Examination Question

Question 3. This question is about the designers that you have studied. It is worth 10 marks.

During your course you have studied the work of Jonathan Ive and Verner Panton. Select one of these designers and write a short essay in the space below to:
• Describe the designer’s work identifying its main features.
• Discuss the influence your chosen designer has had on other designers.

Marks will be awarded for the content of the answer and the quality of written communication.
Developing, Planning and Communicating Ideas - Question 4

This part of the specification is concerned with the process of designing, starting with an original brief and concluding with a proposed solution giving due consideration to the issues that can and should influence the outcome.

- The content of this section can be covered throughout the course through a variety of design and make tasks. Candidates will need regular practice working through the design process and related issues in readiness for the controlled assessment in the final year of the course.

- Centres can use the pages of the CAT for internally set projects in the first year of the course. This will familiarise candidates with the layout of the pages and prepare them for the controlled assessment.

- There is inevitably, some overlap of content with other sections of the specification such as sustainability and environmental issues.

Question 4 on the examination paper relates to The Design Process and this section of the specification. It is in two parts:

Part A - The Design Process
Part B - A Design Task

A typical question for this section is given on the next page.
Typical Examination Question

Question 4. This question is about the Design Process and how it is used. It is worth a total of 25 marks.

PART A

(a) (i) The design process uses a number of steps in a specific order.

Select from the list below the correct activity to complete the table of the steps in the design process. [3]

<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ANALYSIS OF THE TASK</td>
</tr>
<tr>
<td>2</td>
<td>WRITE A DESIGN SPECIFICATION</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PLAN THE MAKING</td>
</tr>
<tr>
<td>7</td>
<td>MAKE THE PRODUCT</td>
</tr>
<tr>
<td>8</td>
<td>EVALUATE THE PRODUCT</td>
</tr>
</tbody>
</table>

(b) (i) State one design aspect that a Design Specification in Product Design will have statements about. [1]

Aspect: ...........................................................................................................................................

(ii) A Plan for Making is more than a list of the making process. State one other consideration included in a plan and describe why it is important.

Consideration: ................................................................................................................................. [1]

Importance: ........................................................................................................................................ [2]
PART B

(a) Salt and Pepper shakers have traditionally looked like the wooden set shown below left. Product designers working for Alessi have transformed the traditional product into a fun yet functional form of shaker called Lilliput's fleas shown below right.

![Traditional Salt and Pepper shakers](image1)

![Alessi designed Lilliput's fleas](image2)

You have been asked to re-design the lever arm corkscrew shown alongside to reflect a more updated design.

![Lever arm corkscrew](image3)

Draw one idea for the sweet box. Use notes to explain your idea.

Marks will be awarded for:

(i) Generate one idea to satisfy a specification. [8]
   • reflect a theme of your choice; [1]
   • use a rack and pinion mechanism as a starting point; [3]
   • include a suitable form for the handle; [2]
   • have a suitable shape for the body and style of lever arms. [2]

(ii) Specify suitable materials. [3]

(iii) Showing the sizes of the net to make the box. [3]

(iv) Quality of communication. [4]
Place your answer in the box on this page.
Section B

Questions 5 - 6 on the examination paper

Commercial Manufacturing Practices - Question 5

This section relates to candidates understanding methods of production used in commercial practice, and showing an appreciation of this in the work undertaken during the course.

- Types of commercial manufacturing
- Consumer protection
- Flat pack furniture
- The purpose of packaging
- Product labelling
- Select and use a range of hand and machine tools to accurately, efficiently and safely process a variety of materials and components.
- Appreciate the ways in which a CNC machine can be used in batch or volume production.
- Have an understanding of marketing and advertising.
- The manufacture of single products and products in quantity i.e. one-off, batch production, volume production.
Typical Examination Question

**Question 5.** This question is about commercial manufacturing processes. This question is worth a total of 10 marks.

A local youth club is having an industry week. You have been asked by the head teacher to manufacture 50 of the heart shapes below. All the hearts must be the same. These are to be given away to visitors.

![Heart shape](image)

**(a)** Choose a specific material you are familiar with and explain why it is suitable for this scale of production.

(i) Material: .................................................................................................
.................................................................................................................................
Reason: ................................................................................................................. [1]

(ii) Use notes and sketches to show how you would accurately manufacture the correct number of shapes needed. [3]

**(b)** (i) Quality control is a vital part of the manufacturing process.

Briefly describe what is meant by quality control.
.................................................................................................................................
................................................................................................................................. [2]

(ii) Name one example of how you could use quality control when manufacturing your shapes.
................................................................................................................................. [1]
(c) There are many regulatory bodies, which look after consumer interests.

(i) What is the name of this symbol? .......................................................... [1]

(ii) When the following symbol is shown on a product, explain how it offers protection to the customer.

.................................................................................................................................. [2]
Knowledge of Materials and Components - Question 6

This section is about developing a knowledge and understanding of a range of woods, metals and plastics and modern materials and components to make quality.

Candidates should develop an understanding of individual materials and components and how they can be combined. Candidates should be encouraged to consider the range of materials and components available and make reasoned selections and exclusions for given tasks.

Candidates should be taught that:

- Materials can be classified according to their working characteristics and properties:
  - Paper/Card.
  - Woods.
  - Metals.
  - Plastics.
  - Commercial packaging materials.
  - Control components.
  - Know about the efficient use of materials, components and commercial manufacturing techniques.
  - Combining materials to improve their properties and uses.
  - How materials are prepared for manufacture and how pre-manufactured standard components are used.
Typical Examination Question

Question 6. This question is about Materials and Components. It is worth a total of 15 marks.

(a) Materials can be classified into groups. Many fit into more than one group.

(i) Name a material which is renewable.

........................................................................................................................................ [1]

(ii) Name a material which is non-renewable.

........................................................................................................................................ [1]

(iii) Name a material, which is biodegradable.

........................................................................................................................................ [1]

(iv) Give one advantage of using biodegradable materials for packaging.

........................................................................................................................................ [1]

(b) The diagram shows a replacement 3 pin plug and cable.

Underline the correct material type and name the specific material for each of the parts labeled. Two are done already for you. [4 x 1]

<table>
<thead>
<tr>
<th>Part</th>
<th>Material Type</th>
<th>Specific Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Body of plug</td>
<td>Metal Plastic Wood</td>
<td>Melamine Formaldehyde</td>
</tr>
<tr>
<td>2. Pins</td>
<td>Metal Plastic Wood</td>
<td>Brass</td>
</tr>
<tr>
<td>3. Cable Coating</td>
<td>Metal Plastic Wood</td>
<td></td>
</tr>
<tr>
<td>4. Wires</td>
<td>Metal Plastic Wood</td>
<td></td>
</tr>
</tbody>
</table>
(c) (i) The body of the plug is made from *Melamine Formaldehyde*.

State one property of this material and explain why it is important in this product. [2]

Property: ................................................................................................................................

Explanation: ................................................................................................................................

(ii) The pins of the plug are made from brass.

State one property of this material and explain why it is important in this product. [2]

Property: ................................................................................................................................

Explanation: ................................................................................................................................

(d) Increasingly, manufacturers will use wood from managed forests.

Explain what you understand by the term 'managed forests'. [3]

.....................................................................................................................................................

.....................................................................................................................................................

.....................................................................................................................................................
Tools, Equipment and Making - Question 7

This section is about developing a knowledge and understanding of how to safely use a range of hand tools, machine tools, equipment and software appropriate to the manufacture of product design including the use of CAD/CAM equipment.

- Observe safety procedures in the working environment.
- Select and use the correct hand tools and equipment for a range of practical tasks.
- Know how to set up and adjust equipment safely.
- Know how to skilfully use range of media should be used including:
- Know how to set up and use with accuracy and precision:
- To design and manufacture three-dimensional models suitable for their purpose.
- Use IMAGE EDITING SOFTWARE – Bitmap/Pixel or Painting Software
- Use VECTOR DRAWING SOFTWARE – Drawing packages
- Use PAGE LAYOUT SOFTWARE – Desk Top Publishing packages
- Select and use a range of hand and machine tools to accurately, efficiently and safely process a variety of materials and components.
- Select and use correct materials, hand tools and equipment for a range of practical tasks.
- Use appropriate modelling techniques for developing and communicating proposals.
- Devise and apply tests to check the quality of their work at critical points during development.
- Provide a detailed, objective evaluation of the final product.
Typical Examination Question

**Question 7.** This is about Tools, Equipment and Making. It is worth a total of 20 marks.

(a) A disposable plastic sandwich container is shown below

![Image of a plastic sandwich container](image)

(i) From the list below, **underline** the correct process used to manufacture the sandwich container.  

<table>
<thead>
<tr>
<th>Blow Moulding</th>
<th>Vacuum Forming</th>
<th>Press Moulding</th>
</tr>
</thead>
</table>

(ii) Name a suitable plastic material for the sandwich container.

........................................................................................................................................................................ [1]

(iii) Give **two** reasons why the material you named in part (ii) is suitable for the sandwich container.

Reason 1: .................................................................................................................................................................... [2]

........................................................................................................................................................................ [2]

Reason 2: .................................................................................................................................................................... [2]
(b) The diagram below shows a bookcase manufactured from veneered chipboard together with details of a corner fastening.

(i) Underline the correct answer below. *Knock Down Fitting* (KDF) is a: [1]

**Permanent**  **Temporary**

(ii) The bookcase is bought *flat packed*. Explain what you understand by this term.

.................................................................................................................................................... [2]

(iii) Explain the advantages of using the corner fastening shown to construct the bookcase.

.................................................................................................................................................... [2]
(c) A product designer has been asked to restyle the handle of a garden trowel. The front part of the trowel is shown below.

From a product designer’s point of view, there are important points that should be considered when designing a successful handle for the trowel.

(i) State a suitable material to make the model. [1]
...........................................................................................................................................

(ii) Give one reason why a designer would make a block model when developing a new design. [2]
...........................................................................................................................................
...........................................................................................................................................

(iii) Suggest a suitable finish that you would apply to your model of the handle. [1]
...........................................................................................................................................

(iv) How would the study of Anthropometrics/Human Factors assist in the design? [1]
...........................................................................................................................................
(d) The photograph alongside shows a block model of a garden fork.

(i) Use the grid below to make sketches of the parts needed to make the block model for the garden fork above. [4]
Product design candidates are expected to use computer systems with appropriate software and hardware to support their designing and manufacturing. They need to be able to use ICT systems to assist research for problem solving. They need to be able to use ICT systems to process text, analyse data, generate 2D and 3D images / models and manipulate digital images understanding the working properties related to individual tasks.

Candidates must be taught to:

- Use word processing software to create text.
- Use spreadsheet software to collate numerical data.
- Access the internet and world wide web.
- Set up and use digital capture devices.
- Output digital files as hard copy.
- CAD (Computer Aided Design).
- CAD SOFTWARE.
- IMAGE EDITORING SOFTWARE.
- Vector drawing.
- Page layout.
- Modelling.
- CAM (Computer Aided Manufacture).
- CAM Software.
- CAM Hardware.
- Using the appropriate CAM machine for a specific purpose:
- Tool Paths;
- How ICT including CAD/CAM is used in batch and volume production, including how to simulate production and assembly lines.
Systems and Processes - Question 9

Product Design candidates must develop a detailed knowledge and understanding of the range of systems and processes required to analyse, design, develop, construct and evaluate typical products that include control systems. Through practical activity, candidates should develop the associated skills to allow the production of high quality products.

Candidates should be taught to:

- Analyse familiar products in term of input, process and output.
- Understand why feedback is important in some systems.
- Analyse the nature of systems in products used everyday for example:
  - How microprocessors are increasingly used in control systems.
  - How control systems and sub-systems can be designed, used and connected to achieve different purposes.
- Devise and apply test procedures to check the quality of their Processes.
- Wasting.
- Deforming.
- Fabricating.
- Reforming.
- Use a variety of graphic techniques to communicate ideas clearly.
- To use both Plane and Solid Geometry:
  - PLANE;
  - SOLID.
- Design and produce ways of communicating information graphically.
Typical Examination Question

Question 8. This question is about ICT, CAD/CAM, Systems and Processes. It is worth a total of 15 marks.

(a) Computer aided design (CAD) and computer aided manufacture (CAM) are now used in the design and prototyping of products.

(i) Explain the advantages of using CAD for designing. [2]

..........................................................................................................................
..........................................................................................................................
..........................................................................................................................

(ii) Explain the advantages of using CAM when making prototypes. [2]

..........................................................................................................................
..........................................................................................................................
..........................................................................................................................

(b) A cosmetics company is redesigning one of its range of perfumes. An image of the company’s logo needs to be included on a prototype package and a flat bed scanner, as shown, is a commonly used tool to do this job.

(i) Complete the sentences about the scanner using the correct words from the list below. [3]

<table>
<thead>
<tr>
<th>Input</th>
<th>Resolution</th>
<th>Colour</th>
<th>2D</th>
<th>Images</th>
<th>Scale</th>
</tr>
</thead>
</table>

It is used to copy ........................................ into a computer.

It is usually used to copy ........................................ objects but can be used to copy 3D objects too.

A flat bed scanner is a computer ........................................ device.

(ii) From the list below, underline which type of software packages you would use to alter the image. [1]

- A bitmap editing package
- A vector drawing package
- A video editing package.
(c) A drawing of the new perfume box is shown below.

The Orthographic Drawing below has already been started.

(i) Complete the drawing of the Plan and End views. [4]
(d) When a product is launched it could follow a Product Life Cycle Curve like the one below.

(i) Label the missing part to the cycle. [1]

(ii) Explain what happens to sales in part C.

...................................................................................................................
...................................................................................................................
................................................................................................................... [2]
The specification allows you the option of following a unitised or linear style of course. Below are shown two possible options of study that you may consider for your schemes of work.

Option 1

- **Year 10**

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills/Knowledge</td>
<td>Skills/Knowledge</td>
<td>Skills/Knowledge</td>
</tr>
<tr>
<td>Unit 1</td>
<td>Unit 1</td>
<td>Unit 1/ Examination</td>
</tr>
</tbody>
</table>

- **Year 11**

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT</td>
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<td>CAT</td>
</tr>
<tr>
<td>CAT</td>
<td>CAT</td>
<td>CAT/ Unit 1 Examination</td>
</tr>
</tbody>
</table>

Option 2

- **Year 10**

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills/Knowledge</td>
<td>Skills/Knowledge</td>
<td>Skills/Knowledge</td>
</tr>
<tr>
<td>CAT/Unit 1</td>
<td>CAT/Unit 1</td>
<td>CAT/Unit 1</td>
</tr>
</tbody>
</table>

- **Year 11**

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT</td>
<td>CAT</td>
<td>CAT</td>
</tr>
<tr>
<td>CAT</td>
<td>CAT</td>
<td>CAT/ Unit 1 Examination</td>
</tr>
</tbody>
</table>
In addition to any books mentioned in the guidance, the following may be found to be useful.

**Universal Principles of Design**  
- ISBN 13: 9781592530076  
- Published Date: 01/10/2003  
- Publisher: Rockport Publishers Inc.

**Design Secrets: Products**  
- ISBN 13: 9781564964762  
- Published Date: 29/08/2003  
- Publisher: Rockport Publishers Inc.

**Design Secrets: Products 2**  
- ISBN 13: 9781592532926  
- Published Date: 01/10/2006  
- Publisher: Rockport Publishers Inc.

**Design Secrets: Furniture**  
- ISBN 13: 9781592534395  
- Published Date: 01/05/2008  
- Publisher: Rockport Publishers Inc.

**Design Secrets: Packaging**  
- ISBN 13: 9781592531295  
- Published Date: 01/04/2004  
- Publisher: Rockport Publishers Inc.

**Design Modelling – Visualising Ideas in 2D and 3D**  
- ISBN 13: 9780340663394  
- Published Date: 03/04/2000  
- Publisher: Hodder Education

**Becoming a Product Designer**  
- ISBN 13: 9780471223535  
- Published Date: 05/03/2004  
- Publisher: John Wiley & Sons Ltd

**AQA Product Design**  
- ISBN 13: 9781903068816  
- Published Date: 02/04/2003  
- Publisher: Lonsdale Revision Guides

**AQA Product Design – Student Workbook**  
- ISBN 13: 9781903068861  
- Published Date: 04/09/2003  
- Publisher: Lonsdale Revision Guides

**Display & Publicity**  
- ISBN 13: 9789057680403  
- Published Date: 31/03/2004  
- Publisher: Pepin Press
## USEFUL WEBSITES

The websites below may be used to guide or support your candidates.

### Design and Technology

<table>
<thead>
<tr>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.bigpicture@wellcome.ac.uk">http://www.bigpicture@wellcome.ac.uk</a></td>
<td>Nano Technology</td>
</tr>
<tr>
<td><a href="http://www.cat.org.uk">http://www.cat.org.uk</a></td>
<td>Centre for Alternative Technology</td>
</tr>
<tr>
<td><a href="http://www.thedesignline.co.uk/tdl/index.html">http://www.thedesignline.co.uk/tdl/index.html</a></td>
<td>Notes for A/AS</td>
</tr>
<tr>
<td><a href="http://www.technologystudent.com/">http://www.technologystudent.com/</a></td>
<td>GCSE – useful for students studying different courses</td>
</tr>
<tr>
<td><a href="http://www.btinternet.com/~hognosam/gcse/">http://www.btinternet.com/~hognosam/gcse/</a></td>
<td>GCSE – useful for students studying different courses</td>
</tr>
<tr>
<td><a href="http://www.g">http://www.g</a> Glover.co.uk/</td>
<td>A website guiding students through the project phase of Resistant Materials GCSE.</td>
</tr>
<tr>
<td><a href="http://www.gglover.co.uk/graphics/">http://www.gglover.co.uk/graphics/</a></td>
<td>A website guiding students through the project phase of Graphics Products GCSE.</td>
</tr>
<tr>
<td><a href="http://robotics.nasa.gov/rcc">http://robotics.nasa.gov/rcc</a></td>
<td>A robotics in education by NASA</td>
</tr>
<tr>
<td><a href="http://www.thetimes100.co.uk/">http://www.thetimes100.co.uk/</a></td>
<td>‘The Times 100’ Excellent for students in the field of Technology, Business and Economics. Full of high spec resources.</td>
</tr>
<tr>
<td><a href="http://www.berkley7.freeserve.co.uk/">http://www.berkley7.freeserve.co.uk/</a></td>
<td>Excellent collection of resources for D&amp;T teachers.</td>
</tr>
<tr>
<td><a href="http://www.sda-uk.org/">http://www.sda-uk.org/</a></td>
<td>Great resources for promoting Sustainable Technology.</td>
</tr>
<tr>
<td><a href="http://www.stepin.org/">http://www.stepin.org/</a></td>
<td>A website focusing on building paper/ cardboard models.</td>
</tr>
<tr>
<td><a href="http://www.paper">http://www.paper</a> toys.com/</td>
<td>Website listing the providers of parts for robot construction.</td>
</tr>
<tr>
<td><a href="http://www.school-electronics.co.uk/">http://www.school-electronics.co.uk/</a></td>
<td>Historical posters from films and adverts.</td>
</tr>
<tr>
<td><a href="http://www.collect-online.com/">http://www.collect-online.com/</a></td>
<td>Resources for Electronics from KS2 to A Level.</td>
</tr>
<tr>
<td><a href="http://www.edutek.ltd.uk/">http://www.edutek.ltd.uk/</a></td>
<td></td>
</tr>
</tbody>
</table>
### Website

<table>
<thead>
<tr>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.tenlinks.com/">http://www.tenlinks.com/</a></td>
<td>Useful links to careers in D&amp;T</td>
</tr>
<tr>
<td><a href="http://www.bbc.co.uk/schools/gcsebitesize/design/">http://www.bbc.co.uk/schools/gcsebitesize/design/</a></td>
<td>A range of topics covered – from electronics to textiles.</td>
</tr>
<tr>
<td><a href="http://www.techitoutuk.com/">http://www.techitoutuk.com/</a></td>
<td>Over 600 links on this site to other D&amp;T sites.</td>
</tr>
<tr>
<td><a href="http://www.animatedworksheets.co.uk/">http://www.animatedworksheets.co.uk/</a></td>
<td>Animated sheets on technology skills.</td>
</tr>
<tr>
<td><a href="http://www.design-technology.org/tvs.htm">http://www.design-technology.org/tvs.htm</a></td>
<td>Multi disciplined approach to D&amp;T</td>
</tr>
<tr>
<td><a href="http://britishlogos.co.uk">http://britishlogos.co.uk</a></td>
<td>Logo design company.</td>
</tr>
<tr>
<td><a href="http://goodlogo.com">http://goodlogo.com</a></td>
<td>Logos and how to use them effectively.</td>
</tr>
</tbody>
</table>
Websites using 'SMART' technology

http://www.mutr.co.uk
http://www.smart-material.com
http://www.utias.utoronto.ca/test/res/sm/asm-proj.html
http://www.intellimat.com
http://www.tep.org.uk
http://www.designcouncil.org.uk
http://www.ffodforum.org.uk
http://www.textiletoolkit.com
http://www.gorefabrics.com
http://www.kevlar.com
http://www.laperla.com
http://www.microban.co.uk
http://www.fagerdala.com
http://www.polaris-apparel.co.uk
http://www.softswitch.co.uk
http://www.sympatex.com
http://www.gorix.com
http://www.electrotexiles.com
http://www.rohan.co.uk
http://www.newscientist.com