# Website Exemplar
# GCE (AS) Resistant Materials
# Unit: 6RM01
# Topic: Bicycle Water Bottle.

| Notes | | |
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| A | Performance Analysis | This comprehensive section is well done and of high quality. The product analysis is laid out logically and is easy to follow. The student uses the first column to identify a range of appropriate specification points under the sub-headings recommended in the subject specification; the second and third columns are used to assess how well the product under investigation and the selected similar product match the product specification and the fourth column evaluates which of the two products is most successful at matching the specification statements.<br>This focused and successful approach to the product analysis is succinctly presented and fully matches the requirements of the assessment criteria. The information presented on page 1 is an indication of the efforts the student has made in getting to know the product chosen for investigation and activities such as this are invaluable.<br><br>Mark range 4-6 |
| B | Materials & Components | Materials are appropriately identified and justified for their use in the product under investigation and advantages and disadvantages are considered.<br>The student appears to have misunderstood part of the requirements of this section, as materials for the alternative similar product are also identified. These named materials would have been appropriate as 'alternative materials', so credit can be allowed. On page 7 an evaluation/comparison chart discusses alternative materials and justifies the selected ones for use in the product.<br>Environmental concerns are superficial and relate to extraction of materials and whether they can be recycled, but no reference is made to the environmental effects of extraction.<br><br>Mark range 7-9 |
| C | Manufacture | Appropriate manufacturing processes are identified and justified for use on the product e.g. blow moulding used to create hollow shapes (bottle body); injection moulding used for small intricate and complex shapes (lid).<br>The student continues to discuss the similar product in manufacturing terms, identifying different processes that could be used in production and these can be accepted in this case as viable alternatives for manufacture of the product under investigation.<br>The evaluation/comparison table on page 7 also offers information |

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| | | on alternative manufacturing processes and this meets the assessment requirements.<br>Environmental impacts of manufacturing are considered, but superficially.<br><br>Mark range 7-9 |
| D | Quality | Some valid Quality Control checks are described under the heading 'The unit' on page 8 but these are limited. The first paragraph under QC is simply a description of what QC is and scores no credit as the requirement is for a description of the checks carried out on the product.<br>No quality assurance system is presented and although a single standard is shown, there is no information to say how such a standard would affect the manufacture of the product under investigation.<br>The life cycle analysis scores no marks as it is of no use to QC or environmental impact.<br><br>Mark range 1-3 |
| E | Design & Development | The student has presented a wide range of alternative ideas for public seating and annotation provides technical information on possible construction materials and processes. Ideas are detailed and the student has used images gathered as inspiration for some designs.<br>Ideas are evaluated against specification points as work proceeds and are formally reviewed on page 16 to decide which idea to take forward for development into a final design proposal.<br>Development should illustrate change and show continuing design input to refine an idea into a final design proposal that shows differences from initial ideas, but there appears to be little change in the overall final design proposal from the original idea. However, there is significant development in design and structural details, especially when modelling.<br>Modelling in resistant materials on page 18 is used to visualise the design in 3D and to resolve structural issues and 3D CAD is used to visualise the design proposal and to apply a 'virtual' finish to the completed proposal.<br>This high quality section demonstrates the student's design competencies and his ability to transfer knowledge and understanding of materials, processes and techniques learned in Unit 2 of his course of study in RMT. The only criticisms are a slight lack of development when moving an initial idea on to a final proposal and some statements of evaluation that are not justified to explain why the product meets the manufacturing criteria.<br><br>Mark range 13-18 |
| F | Communicate | Communication skills are of a high order throughout this section. Despite information regarding materials, processes and techniques |

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| | | being supplied, the working drawing presented lacks the full detail necessary for a skilled third party to manufacture the product. Some dimensions are unrealistic as the drawing was generated automatically from the 3D CAD sketch. A cutting list would have been of benefit too.<br><br>Mark range 7-12 |
| G | Production Plan | A detailed plan in the form of a flow chart is presented showing stages of production in the correct sequence, and quality checks. A detailed and extensive Gantt chart is also presented showing projected times for procedures and this chart also shows modifications detailing where timings failed to match those originally given and explanations of why this was.<br><br>Mark range 4-6 |
| H | Making | A comprehensive diary of manufacture is presented showing clear images, if slightly small, of the stages in making the product. Risk assessment is shown on page 27 and safety awareness is discussed on page 31. There is no doubt that the outcome is of a high standard and includes evidence of high levels of skill and precision. However, there is no justification for the selection of particular materials for use during manufacture, which prevents this work being awarded maximum marks.<br><br>Mark range 13-18 |
| I | Testing | Testing is carried out against points of specification and the student describes how this was done and what the outcomes were. Dimensional testing is also carried out against tolerance levels. Testing by potential users is recorded, giving useful feedback.<br><br>Mark range 4-6 |