**Stage 2 Digital Communication Solutions**

**Design, Technology and Engineering**

External Assessment

**Assessment Type 3: Resource Study**

Purpose

Students investigate and analyse design features, processes, materials, and production techniques and apply creative thinking to the design of a solution. Students apply critical problem solving skills and incorporate technologies to address design problems and challenges. Through this task students plan, develop, test and validate concepts and procedures.

Students analyse influences on a solution including ethical, legal, economic, and/or sustainability issues. They consider the practical implication of these issues on society or design solutions.

Description of task

**Part One: Resource Investigation**

You will investigate and analyse the functional characteristics and properties of two or more materials or components that you are considering for use in the creation of your solution. (E.g. camera equipment (camera types, lenses or lighting), camera settings, printing quality of paper, resolution of images etc.)

You will report on how this research into and testing of the functional characteristics and properties of these materials or components will affect their selection for use in the realisation of your solution.

Components you will need to complete;

* Identification of the genre related to the AT2: Design Process and Solution will influence your choice of investigation. Possible ideas include;
	+ Sport. Compare telephoto lenses to standard lenses. Field of view and aperture range. Image quality would be compared by Pixel-peeping parts of the image.
	+ Live music Photography. Compare the use of different ISO settings and the resultant noise that will occur using the higher settings. Also how do faster aperture lenses help this and how some cameras use smudging to reduce noise. Suggested settings could be ISO 200, 400, 800, 1600, 3200 and 6400. Image quality would be compared by Pixel-peeping parts of the image.
	+ Landscape Photography. Compare the different image quality effects that camera shake causes. What shutters speeds give satisfactory results Vs Tripod use? Use of modern technology such as Image Stabilization, in body and in lens. Image quality would be compared by Pixel-peeping parts of the image.
	+ Portraiture. Compare the different facial perspectives that the differing focal length lenses causes. What is the sweet spot and why? Also look at the different aperture and their effect on the softening of the background (Bokeh).
* Identify two or more materials or components to test, state the reasons clearly why these materials or components have been selected.
* Conduct relevant research, and identify important existing properties for the chosen materials or components.
* Outline the testing methods. (The use of images, diagrams, charts, simulations and videos is encouraged to show this evidence)
* Description of results or table/graph test results
* Analyse the results and draw conclusions
* Indicating how and when this knowledge can be used, if the technology of these materials and components have changed and what are the likely developments.
* Bibliography and correct referencing within the document.

The specific features of the assessment design criteria assessed in this part are:

* Investigation and Analysis 1 (I1)
* Design Development and Planning 2 (D2).

**Part Two: Issues Exploration**

Students investigate and analyse ethical, legal, economic and/or sustainability issues related to their solution.

Issues relating to the genre is to be focused on and should include how these impact on individuals and communities. Possible ideas include:

* Sport; the use of images of sports starts for promotional purposes
* Live music Photography; the use of mobile phones to photograph and film concerts
* Landscape Photography; the photographing of important and sacred sites relating to indigenous cultures
* Portraiture; the use of Photoshop to enhance images for magazines and advertising

Discuss your issues proposal with your teacher.

The specific features of the assessment design criteria assessed in this part are:

* Investigation and Analysis 2 (I2)
* Evaluation (E1).

Assessment conditions

Evidence for this assessment type, Resource Study, (comprising of the two sections: Resource Investigation and Issues Exploration) should be provided in written or multimodal form or a combination of both. It should be up to a maximum of 2000 words if written or the equivalent in multimodal form, where 1000 words is equivalent to 6 minutes.

The following specific features of the assessment design criteria for this subject are assessed in the Resource Study:

* Investigation and Analysis
* Design Development and Planning (D2)
* Evaluation

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| Investigations and Analysis | Design Development and Planning | Production | Evaluation |
| A | Comprehensive and insightful analysis of the design features of products, processes, materials, systems and/or production techniquesPurposeful research and critical analysis of ethical, legal, economic and/or sustainability issues | Insightful and comprehensive communication of design concepts using relevant technical language and visual representationsInsightful and thorough planning, development, testing and validation of design concepts and procedures | Highly proficient application of skills, processes, procedures and techniques to create a solutionComprehensive development of solutions to technical problems that arise during the solution realisation | Comprehensive and insightful evaluation of the solution features, realisation process, and/or response to issues |
| B | Thoughtful and well-considered analysis of the design features of products, processes, materials, systems and/or production techniquesDetailed research and well-considered discussion of ethical, legal, economic and/or sustainability issues | Thoughtful and well-considered communication of design concepts using relevant technical language and visual representationsWell-considered planning, development, testing and validation of design concepts and procedures  | Proficient application of skills, processes, procedures and techniques to create a solutionThoughtful development of solutions to technical problems that arise during the solution realisation | Well-informed and detailed evaluation of the solution features, realisation process, and/or response to issues |
| C | Considered analysis of the design features of products, processes, materials, systems and/or production techniquesResearch and some analysis of ethical, legal, economic and/or sustainability issues | Clear communication of design concepts using technical language and some visual representationsCompetent planning, development, testing and validation of some design concepts and procedures  | Competent application of skills, processes, procedures and techniques to create a solutionDevelopment of solutions to technical problems that arise during the solution realisation | Considered evaluation of the solution features, realisation process, and/or response to issues |
| D | Identification of the design features of products, processes, materials, systems and/or production techniquesSome description of information about ethical, legal, economic and/or sustainability issues | Basic communication of design concepts using some technical languageSome planning and development of design concepts and/or procedures | Basic application of some skills, processes, procedures and techniques to create a solutionSome endeavour to develop solutions to technical problems that arise during the solution realisation | Some description of the solution features, realisation process, and/or response to issues |
| E | Attempted identification of the design features of products, processes, materials, systems and/or production techniquesSome accessing of information about ethical, legal, economic and/or sustainability issues | Superficial and simplistic communication of design concepts Limited use of information to plan design concepts  | Limited application of emerging skills Attempted development of a solution to a technical problem  | Emerging recognition of the solution features, realisation process, and/or response to issues |

Teacher comment:

Overall grade