2012 HSC Notes from the Marking Centre – Design and Technology

Contents

Introduction

This document has been produced for the teachers and candidates of the Stage 6 course in Design and Technology. It contains comments on candidate responses to the 2012 Higher School Certificate examination, indicating the quality of the responses and highlighting their relative strengths and weaknesses.

This document should be read along with the relevant syllabus, the 2012 Higher School Certificate examination, the marking guidelines and other support documents developed by the Board of Studies to assist in the teaching and learning of Design and Technology.

General comments

Teachers and candidates should be aware that examiners may ask questions that address the syllabus outcomes in a manner that requires candidates to respond by integrating the knowledge, understanding and skills they developed through studying the course.

Candidates need to be aware that the marks allocated to the question and the answer space (where this is provided on the examination paper) are guides to the length of the required response. A longer response will not in itself lead to higher marks. Writing far beyond the indicated space may reduce the time available for answering other questions.

Candidates need to be familiar with the Board's Glossary of Key Words, which contains some terms commonly used in examination questions. However, candidates should also be aware that not all questions will start with, or contain, one of the key words from the glossary. Questions such as 'how?', 'why?' or 'to what extent?' may be asked, or verbs that are not included in the glossary may be used, such as 'design', 'translate' or 'list'.

Major design project

Design folio – general comments

Teachers and candidates should be aware of the 80-page limit that applies to the design folio. Supporting information to assist in preparing a design folio can be found on the Board of Studies website. Candidates are expected to submit major design projects that comply with these folio requirements. Mark penalties may apply if the limits are exceeded. For folios that contain both paper-based and multimedia material, the paper parts of the folio must comply

with the format requirements and the multimedia parts of the folio must not exceed six minutes of viewing time in total.

This time limit does not apply to a multimedia product; however, it is strongly recommended that a multimedia product does not extend beyond 10 minutes. In many cases, the skills demonstrated in the first 10 minutes are sufficient for marking and longer presentations are unnecessary.

To clarify, if an e-folio is submitted, it should be accompanied by a paper version to ensure that the project can be marked, even if there is a failure in the technology, and so markers can easily determine if the folio is within the folio parameters.

Any hyperlinks included will be counted as part of the six-minutes maximum viewing time.

All pages of the folio should be numbered and count toward the page limit, including:

- title page
- index
- appendix
- journal or diary
- bibliography
- research
- samples of any surveys
- time, action and finance plans
- documentation of testing/experimentation
- evidence of specific practical activities or evaluative measures
- design ideas, concept sketches and detailed drawings
- any information presented on displays or noticeboards.

In some of the better folios, candidates displayed their work using A4-size pages and 12-point font throughout, as well as clearly and correctly numbering their pages. Some of the better folios included just one survey as a sample and clearly showed how the results of the survey were used in the development or modification of the design project. In the better projects, candidates did not display large drawings and photographs on walls and boards as these items were already displayed in the folio or – if they used images that were scanned and reduced in their folios – the images were not too small and still easy to read or interpret.

In better responses, candidates selected and synthesised material to communicate the design, development, realisation and evaluation aspects of the course. In the better responses, candidates communicated the design process succinctly and clearly, and adhered to the page limits.

Project proposal and project management

General comments

In better responses, candidates clearly set out the nature and scope of the design problem without citing definitions or providing excessive Gantt charts. In weaker responses, candidates provided very generic information in this section, with some not relating the information well to their identified PSE. Simple statements were made with little investigation evident, or basic statements were attached to a heading. Some candidates presented time, action and finance plans as a diary, with little or no evidence of forward planning.

Identification and exploration of the need

In better responses, candidates identified a genuine need, demonstrated the application of critical analysis skills to the investigation of the need and drew conclusions regarding the criteria for evaluation.

In mid-range responses, candidates presented a range of alternative possibilities for their design project and articulated why they chose the final item.

In weaker responses, candidates tended to simply state what they proposed to make.

Areas of investigation

In better responses, candidates included a broad range of relevant areas to be investigated, with supporting discussion of the how and why of the intended design project. They also included a detailed analysis of the range of logical and relevant areas that could possibly be researched and the methodologies to be used to inform the development of the product, system or environment.

In mid-range responses, candidates provided a few relevant areas of investigation, supported with some description.

In weaker responses, candidates cited areas that were generic and supported these by a definition rather than an explanation of why the investigation would occur and how it would be carried out.

Criteria to evaluate success

In better responses, candidates employed several criteria in addition to the usual functional and aesthetic in determining the project's success, closely linking the project proposal and the needs that the design project should meet. These criteria added a depth to the candidates' understanding about successful design, in terms of their specific PSE.

In weaker responses, candidates indicated factors of design as the criteria for success. In these responses, candidates tended to simply list a limited number of criteria without any clear explanatory discussion.

Action, time and finance plans and their application

In better responses, candidates indicated clear and appropriate actions in terms of the design and development process. These were tailored to the specific product, system or environmental needs. In these responses, candidates used the action plan to support the assessment of progress and a management tool to help them achieve success. These plans were concise and did not take up too much space in terms of number of pages.

In addition, these candidates demonstrated a genuine attempt to develop a budget based on available financial resources and likely costs and expenses. Application of time was clearly displayed through a completed PSE and supporting models/prototypes, testing or design modification.

In weaker responses, candidates completed a generic template after the completion of the project, rather than using the timeline as a planning tool, thereby presenting an obviously false representation. In some weaker responses, candidates presented a generic form of plan, which generally lacked forward actions. In some of these responses, candidates simply included a collection of receipts after the event with no real evidence of actual financial planning or management.

Project development and realisation

General comments

Quality projects were supported by appropriate project development along with relevant design solutions or modifications. This included idea generation and the development of these ideas in a logical and sequential manner. In better responses, candidates clearly supported their final product, system or environment in this way.

In better responses, candidates used alternate methods to communicate the design process, rather than writing vast amounts of text in the design folio. These candidates employed many samples, tests, models and/or prototypes to show the journey that they followed throughout the development of the design solution.

In weaker responses, candidates did not demonstrate relevant research, experimentation or testing in areas that presented the opportunity to show further development or refinement in the design project. In these responses, candidates appeared to have a project solution in mind from the outset and simply followed the process of making, with a 'design as you go' strategy.

Evidence of creativity – idea generation, degree of difference and exploration of existing ideas

In better responses, candidates displayed a range of ideas and showed creativity in their design concepts and thought-development process, model production and use of technology. These responses also included analysis of a range of existing ideas that assisted in the development and design of the final product, system or environment.

In weaker responses, candidates displayed simplistic ideas using basic sketching techniques with limited detail or design ideas for further development. These projects did not state a genuine need nor support their idea generation or development.

Consideration of design factors relevant to the major design project

In better responses, candidates selected the most important design factors that related directly to their product, system or environment. The three to five that were most commonly used, were then discussed in a concise manner, to include why and how these factors were important to the project.

In weaker responses, candidates were unsure of which design factors were relevant to their design project. They did not relate the factors directly to their project and simply included a list of factors from the syllabus, whether relevant or not.

Appropriate research and experimentation of materials, tools and techniques, and testing of design solutions

In better responses, candidates referred to the use of relevant and appropriate testing and created a broad range of model solutions to inform the design development. The design process and relevance to further design modification was clearly seen through these tests.

Better responses, candidates did not include lengthy discussion that repeated the evidence seen in the testing in the design folio.

In weaker responses, candidates did not apply appropriate research techniques or display suitable design testing as the final PSE solution appeared to be already determined.

Application of conclusions

In better responses, candidates carried out relevant developmental processes and provided evidence of their application of the conclusions drawn to their product, system or environment. These responses included the application of skills and techniques to show tests, concepts and/or design development.

In weaker responses, candidates included general and non-specific testing, without making any further design development.

Identification and justification of ideas and resources used

In better responses, candidates identified the most relevant resources and justified their application and value. Many candidates used samples to assist in confirming the relevance of the work.

In weaker responses, candidates simply listed resources that played some or no part in the development of the product, system or environment.

Use of communication and presentation techniques

In better responses, candidates clearly and succinctly communicated their ideas and concepts and selected appropriate techniques to do so within the 80-page-folio requirement. Many candidates used short multimedia techniques to communicate the evaluative or testing measures that were used.

Evidence and application of practical skills to produce a quality project

In many better responses, candidates communicated their construction phase through the use of photographs that showed them completing various phases. In the better responses, candidates produced design projects displaying a range of high-quality technical skills through the use of multiple materials in prototypes, models or the final product, system or environment.

In weaker projects, candidates displayed limited processes and technical skill, with several projects being presented incomplete.

Project evaluation

General comments

In better responses, candidates displayed some critical analysis and demonstrated an understanding of the relationship between their product, system or environment, and society and the environment. Multimedia technology was commonly used to communicate the evaluation or testing measures that occurred in the development of the product, system or environment.

Recording and application of evaluation procedures throughout the design project

In better projects, candidates used referencing notes throughout the folio or attached to their models of design development to emphasise their efforts at evaluation. The presentation of developing models and prototypes communicated clearly to markers that ongoing evaluation had occurred.

Analysis and evaluation of functional and aesthetic aspects of design

The majority of candidates demonstrated an understanding of function and aesthetics as applied to their product, system or environment.

In better responses, candidates displayed a clear understanding of the aspects of design and related them to the design project. In many situations, these aspects were included in the professional statements and linked well to the intent of the product, system or environment.

Final evaluation with respect to the project proposal and the project's effect on society and the environment

In better responses, candidates provided a clear link between their project and its effect upon society and the environment.

In weaker responses, candidates did not communicate the final evaluation of the effect of the products, systems or environments on society and the environment. They cited general and non-specific issues and did not examine closely enough the effect of their final design.

Relationship of the final product, system or environment to the project proposal

In better responses, candidates presented clear and concise discussions in point form, often 'checking off' each aspect as cited in the initial project proposal. In better responses, candidates effectively addressed the criteria cited in the project proposal, providing a clear and detailed summation.

In weaker responses, candidates simply addressed one or two aspects in a limited way. In these responses, candidates failed to draw a parallel between the product, system or environment and the criteria for success established in the project proposal.

Written examination

Section II

Question 11

In better responses, candidates outlined why ergonomic factors are considered by designers when developing a new product, including to improve ease of use and comfort, to reduce injuries and improve safety.

In weaker responses, candidates identified an ergonomic feature.

Question 12

In better responses, candidates described how the changing nature of communication technologies, such as 3D modelling, mobile technologies and email, has affected teamwork and collaborative design processes. In these responses, candidates provided characteristics and features of effects such as allowing real-time feedback, encouraging global communication and the ability to target issues to specific team members.

In mid-range responses, candidates outlined how teamwork and collaborative design processes, such as easier communication and faster sharing of designs, have been affected by the changing nature of information and communication technologies.

In weaker responses, candidates identified a feature associated with teamwork and collaborative design processes.

Question 13

In better responses, candidates clearly showed the relationship between aesthetics and consumer purchasing decisions. They supported their responses with examples of how factors

such as colour, shape, size and product features gain consumer interest and therefore influence the purchase of a product.

In weaker responses, candidates identified an influence of an aesthetic factor, such as appealing to consumers.

Question 14

In better responses, candidates clearly described how designers use new technologies with specific reference to both the marketing and the evaluation of their products and processes. Candidates provided specific examples.

In weaker responses, candidates identified how designers use new technologies but made limited reference to marketing or evaluating processes.

Section III

Question 15

a.   In better responses, candidates drew upon a number of emerging technologies, such as Siri (software application technology), new phone operating systems, lithium ion batteries and integrated communication technologies to form the basis for their response. In these responses, candidates clearly articulated how these emerging technologies were integrated into products or systems and, as a result of this integration, encouraged further technological change. In these responses, candidates clearly explained, through the provision of cause-and-effect statements, how technological change can be fostered through the development, manufacturing and acceptance of technologically enhanced products and systems.

In mid-range responses, candidates discussed the advantages of the integration of emerging technologies into products or systems. In these responses, candidates mostly emphasised the positive changes in the products or systems as a result of the integration of the emerging technology.

In weaker responses, candidates identified a new or emerging technology and outlined where they were integrated into a new product.

In better responses, candidates drew from a number of products or systems to create the foundation for their response. In the majority of responses, candidates used the products referred to in part (a). They provided an in-depth analysis of both the social and economic implications of the designing, introduction and market acceptance of technologically advanced products. This was expanded on by the provision of a number of relevant examples to clearly support their analysis. In most of these responses, candidates differentiated between social and economic outcomes, while others were able to articulate the relationship that existed between the two.

In mid-range responses, candidates described how the new products affected society and the economy. Some candidates responded to this question by focusing more on social effects while also including reference to an economic outcome. In these responses, candidates demonstrated a sound level of knowledge of the social and economic effects of new technologically based products.

In weaker responses, candidates outlined social effects of new products with minimal reference to economic effects.