2007 School-assessed Task Report

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

2007 DESIGN AND TECHNOLOGY GA2: School-assessed Task

Background Information
The School-assessed Task is commenced in Unit 3 and completed in Unit 4. Components of the task relate to Unit 3 Outcome 3, and Unit 4 Outcomes 2 and 3.

Unit 3 Design, technological innovation and manufacture

Outcome 3
Present a folio that documents the procedure and decision making processes used while working as a designer to meet the needs of a client or end-user, and commence production of the designed product.

Nature of task
A design folio comprising:

A client and/or end-user profile, a design brief, evaluation criteria, research, design ideas and options, presentation drawing of final option, production plan, timeline, materials list and record of progress and modifications. The design folio must include documentation of decisions.

Unit 4 Product development, evaluation and promotion

Outcome 2
Competently and safely apply a range of production skills and processes to implement the production plan, make the product designed in Unit 3 Outcome 3, and manage time and resources efficiently.

Nature of task
Production work accompanied by a record of production progress, documentation of decisions and modifications with justification of these changes (text and images should be included).

and

A functional product that conforms to standards of quality, performance, ease of use, and safety.

Outcome 3
Evaluate the outcomes of the design and production activities, and promote the product's design features to the client and/or end-user.

Nature of task
An evaluation report that includes evaluation of the product and production processes.

and

A visual display (e.g. a poster) to promote features and care requirements of the product.

or

A storyboard with captions to promote features and care requirements of the product.

or

A multimedia presentation to promote features and care requirements of the product.

Scope of task
The design folio should incorporate a range of conventional and computer assisted communication methods. Where digital information or drawings are produced, a printout must be provided in the folio. The design folio should be largely completed in Unit 3, but may have some additional material added in Unit 4. It should include the following components:

- A client or end-user profile.

- A design brief including specifications (considerations and constraints) of primary and secondary importance, that outlines the problem/need/s of a client or identified end-user. Teachers should ensure that the design brief allows for both functional and aesthetic aspects of the product to be considered in design options developed by students. The design brief should include an indication of the expected standard and quality of finish/presentation that should be evident in the completed product.
- Criteria for evaluation of the design options and finished product/s. The relevance of each criterion should be explained. Students should also explain how the completed product would be tested or checked against the criteria. The criteria should be weighted according to their degree of importance to the design problem or situation.
- Research (background information, inspiration and trialling to produce ideas for the design options such as historical developments, fashion, trends, styles, ergonomics, safety, cultural influences, properties of materials, available fittings and fastenings, processes, construction methods, suitability of tools, equipment and machines). Sources of information must be acknowledged.
- Development of design ideas (concept mapping and other graphic organisers, brainstorming, drawings, sketches, image/mood boards, annotations, diagrams and models).
- Annotation of design ideas and options in relation to the specifications (considerations and constraints) outlined in the design brief. Reference to research and client or end-user feedback should also be made. It is recommended that students develop between three and six design options. The preferred option should be justified with reference to the weighted design option criteria.
- Working drawing/s and templates/paper patterns that incorporate appropriate conventions developed with reference to the preferred design option.
- A production plan that clearly outlines the steps and sequence, materials list (including fittings and fastenings), tools, equipment and machines needed to safely implement the preferred option within the specified timeline. The production plan should be completed before the production work commences.
- Record of progress (text and images) of production work (commenced in Unit 3 and continued in Unit 4) that also includes:
  - -notes of modifications with justifications (commenced in Unit 3 and continued in Unit 4)
  - -client or end-user feedback log to record dates of contact and decisions that inform the development of the product and other relevant feedback.
- Production work (which should be undertaken by individual students, i.e. not a group project') that includes some processes with a degree of difficulty should result in a three-dimensional product or product range from one of the design specialisation areas listed on page 22 of the study design and that incorporates the use of one or more of the following categories of materials: wood/timber, metal, polymers (plastics), textiles/yarns/fibres/fabrics, ceramics or glass. A single product or product range (two or more products) planned for completion over Units 3 and 4 may be developed from the design brief devised in Unit 3. Teachers and students must ensure that all safety requirements are implemented through hazard identification, risk assessment and risk control processes. The risk management process is outlined on page 45 of the *VCE Design and Technology Study Design*. Risk assessment is defined on page 41 of the study design.
- Trialling and testing materials and processes may occur prior to or during production and be documented in the design folio.
- A presentation (a visual display, storyboard with captions or a multimedia presentation) produced for the client or end-user that promotes the features of the product, explains its care requirements and shows an understanding of the marketing mix (the five Ps).
- The evaluation report should be based on the criteria developed in Unit 3. The evaluation of the product should include reference to client and/or end-user feedback. Students may include results of tests or other methods of analysis in responding to the evaluation criteria. Students should also report on the effectiveness of planning and efficiency of the design and production activities. The report should discuss possible improvements that were and could be made and that could inform future design and production activities.

Teachers must sight and monitor the development and documentation of the student's work on a regular basis.

The Authentication Record for School-assessed Tasks should be used for monitoring students' work in progress for authentication purposes. This sheet must be available if requested by the VCAA. The Additional Teacher Comment sheet should be used to document skills and competencies; particularly those relating to the safe use of tools, equipment and machines and application of processes (Criteria 5–8) that may not be clearly demonstrated in the student's final presentation.

INTRODUCTION

The introduction of a new study design provides new challenges for teachers as they come to terms with new areas of content and reinterpretation of some of the areas of study. A broad range of student work has developed during the first year of implementation of this study that demonstrated some innovative and in some cases unexpected approaches beyond what was expected or anticipated.

Again the work of the high performing students scaled new heights and has really been inspirational to see. It was also evident that the work of low performers stubbornly refuses to rise beyond the minimum standard. Improvement of low performing students is going to be the challenge for teachers, schools and students in the coming years.

Schools that introduce design concepts and process into the curriculum through the VELS domain of Design, Creativity and Technology and provide resources for the area reap the rewards when their students reach VCE.

The study is increasingly attracting students who in the past may have done what are considered by some as more academic subjects. These students are more inclined to put in the extra work required to attain a high level of achievement.

Textiles (yarns/fibres/fabric) students have always enjoyed the design element of the study and their folios continue to reflect this fact. This level of skill and commitment has also been evident in the furniture design area.

Some students use a range of suitable materials for their product, showing a transition from former materials-based approaches to a more design focussed approach, mainly due to the setup of facilities in schools.

Where more traditional school facilities that focus on woodwork and metalwork are provided there is a greater challenge for students to think in a more design-focussed, multiple materials way.

COMMENTS FOR EACH CRITERION

The extent to which the **design folio** demonstrates:

Criterion 1

Skill in developing a client or end-user profile, developing a design brief and evaluation criteria.

- Ability to develop a profile of the client or end-user in relation to the problem to be solved.
- Ability to develop a design brief that defines the needs of a client or identified end-user/s.
- Ability to develop and justify relevant criteria to evaluate design options and the completed product.
- Ability to explain how criteria will be tested or checked in the completed product.

To score a **Very High** for this criterion there must be demonstrated a high level ability to develop a profile of the client or end-user/s relevant to the need/problem to be addressed. There should be a very well constructed and concise design brief that clearly defines the needs and requirements of the client or end-user and includes specifications of identified primary and secondary importance that set the parameters for the designer. The student should provide a range of highly relevant and clearly expressed evaluation criteria that reflect important aspects of the design brief. Valid justification for their selection and how each will be checked or tested in the finished product should be given.

The biggest change to this criterion has been the introduction of the end-user as the focus for the design problem. Some really interesting and innovative approaches included the end-user focus. Some students started with market research to identify a specific demographic and a specific need or potential product to suit that group which was pleasing. Most students focused on a specific client for their design problem but some showed an awareness that the client may not always be the end-user.

This change in this criterion may well be the future catalyst for nurturing some very entrepreneurial approaches by students, so teachers need to be aware of and open to the range of possibilities.

Teachers should encourage students to be concise in the client profile as some of these are beginning to look like biographies and this is not what the profile is about. There has been a tendency to go into far more detail that is not relevant to the design problem.

There has also been a trend toward very extensive design briefs. Teachers need to ensure students develop a concise design brief while still conveying the relevant information that can be elaborated in the specifications. The work done in Outcome 1 gives teachers the opportunity to skill up their students for this important part of the folio. As a general rule students who do this part well go on to produce a good folio and product.

We are still seeing examples of single words being used for the criteria to evaluate the product. Materials, function, ergonomics, client satisfaction and cost are all worthy of inclusion to evaluate the product but these need to be phrased in a question and then justified.

Helpful hints

- It is important to clearly define the problem not provide the solution. Students use the client and/or end-user as a focal point for the definition of a problem.
- In some cases the client or the end-user may not be very helpful; therefore teachers often need to be the sounding board for their students.
- Use the work done for the learning activities for Outcome 1 to help students understand how to design and formulate their brief. Have students draft their brief on a word processor and update the content as their ideas become clearer.
- Make sure that the criteria link to the information in the design brief and specifications.
- Six to eight well thought out criteria to evaluate the design options and product and four to six to evaluate the design and production allow students to go into depth, rather than having too many that only elicit brief answers.

Criterion 2
Skill in carrying out research and developmental work.

- Relevance of research to the need/s, problem/s and/or situation identified in the design brief.
- Ability to research aspects that are relevant to the design problem.
- Ability to carry out a range of development work that forms a basis for the creation of design options.

To score a **Very High** for this criterion, a comprehensive range of research and development is undertaken. The aspects selected for research are highly relevant and inform the subsequent developmental work. A wide variety of methods/techniques are used in the developmental work. The folio shows an outstanding level of ability to document and present the results of the research and developmental activities.

This has area has always been done well but there is a tendency for students to include pages of well presented information without using annotations or notes to explain the relevance of the research. Teachers need to encourage their students to only include information that is relevant to the project. Research and development go on throughout the project and should be seen throughout the folio, not just in the section on research.

Computers have made a huge difference in the presentation of student work, but for development there is no substitute for a pencil to generate ideas. Some students do very well in this area but there is a tendency to go straight from the research to the development of design options without preliminary ideas development. This was evident even in high standard folios.

There were excellent examples of mock ups and models, trialling techniques and gaining skills with new tools and machinery. This type of development work provides the chance to do some practical work to break up the design work that students often find laborious.

Helpful hints

- Have students collect as much research as they can find and then separate the relevant from the less relevant. (Do not discard anything at this stage.)
- Ask students why the research is relevant to their problem and ensure they use their response as the basis for their notations.
- Research into design skills and production processes is relevant.
- Record the sources of, and annotate all research that goes into the folio.
- Record developmental activities in their journal.

Criterion 3
Skill in developing creative and viable design options and justifying the preferred option.

- Use of a range of communication methods to convey design options.
- Ability to demonstrate suitability of the preferred option with reference to the design brief, weighted design option evaluation criteria and feedback from the client or an end-user.

To score a **Very High** for this criterion the student uses a wide range of communication methods to develop original and creative design options. The options are very well presented and detailed and are viable responses to the needs and requirements of the client and/or end-user. The preferred option is clearly justified with reference to the design brief and specifications. The student shows a sophisticated understanding of using weighted design option evaluation criteria and of the importance of client or end-user feedback in selection of the option that best meets the need of the client/end-user.

High scoring work showed highly developed design options that include a range of communication methods and advanced skills in presentation using rendering techniques or computer drawing programs.

There are still students who are producing ten to twelve options. This number is not necessary as four to six well developed and presented options are sufficient to score a very high. Folios showed students are using some innovative ways of making the selection of the preferred option including client and/or end-user feedback in making the selection. Often the preferred option that is taken forward can be derived from a combination of the options. Some students use further market research of end-users to select which option is the most suitable.

Teachers should encourage students to explore new and innovative approaches to the selection of the option that best meets the need of the client and/or end-user.

Helpful hints

- Four to six well developed annotated options are adequate to score a very high.
- If some students show signs of boredom and disengagement, workshop activities and skills work, modelling or trials to test some of their ideas can be a useful strategy.
- The developmental stage is dynamic; students should move between their research, developmental sketching and trials/mock ups during this phase of the project.
- Students should document the work they do in their journal. This information will be useful during the evaluation phase.
- Use a range of methods for gaining feedback from the client/end user.
- Use a selection chart to assist/support the discussion with the client or an end-user on the preferred option.

Criterion 4
Skill in preparing working drawings and a production work plan.

- Preparation of working drawings/patterns using appropriate conventions.
- Preparation of timelines and a sequence of steps necessary to complete the product.
- List of materials, tools, equipment, machines and processes required.
- Knowledge of relevant safety requirements.
- Reference to quality standards.

To score a **Very High** for this criterion the student should provide appropriate working drawings/patterns and a detailed materials list that show advanced understanding of conventions. It should provide a clear, comprehensive and realistic production work plan of how the product is to be completed in the time available. The plan should clearly show detailed knowledge of the sequence of steps in production and demonstrates a broad and sound knowledge of risk assessment processes and the safe use of tools, equipment, machines and processes to produce the preferred design option. There should be a clear explanation of quality control measures to ensure that standards of quality are met.

A working drawing that follows conventions shows dimensions and tolerances that are important in determining the quality of the product.

Students who take the time to prepare a comprehensive work plan will usually do better than if they start the production with grey areas. A well thought-out work plan that includes all the expected components shows advanced planning

skills. It is here that students can also demonstrate their understanding of materials through their selection of tools, equipment and machines and risk assessment and safety factors.

A well set out plan is also the basis for the evaluation of production activities. When it is compared with the journal it allows students to make decisions on the effectiveness of production activities.

Establishing time required for each step in production gives students a point of reference when reviewing how well they met time constraints.

If the student has a set budget, a comprehensive material list will help them project the costs for the project. By comparing their material list-costing with the actual expenditure students can determine how well they have met the cost constraint.

Some students included points for quality control checks in their production plans. This can be combined with a statement on the intended quality standard for the project.

Helpful hints

- As a class exercise have students check each other's working drawings for missing details. Students usually have no problem finding what is missing in others' work.
- Use both linear and block diagrams for developing time lines. Students may understand one type of diagram better than the other.
- By setting up charts and other pro formas for production sequences in Units 1 and 2, students could save a lot of time in Unit 3.
- Some students may find a flow diagram helpful in their production planning.
- Students should include a material list and costing of all materials. Keep receipts and record costing in their journals.

Criterion 5
Understanding of the characteristics and properties of the materials used.

- Evidence of research, trialling and testing of materials and processes.
- Selection of materials appropriate for the product.
- Selection of tools, equipment, machines and processes and safety issues appropriate to the materials.
- Understanding of health and safety issues related to the materials used.

To score a **Very High** on this criterion the student should demonstrate a very high level of understanding of the characteristics and properties of the materials used and how the selected materials' properties enhance the function and appeal of the product. There should be evidence and documentation of comprehensive material testing activities and conclusions drawn to determine their suitability. There should be an advanced knowledge of the selection of tools, equipment/machinery and safety issues related to production based on the materials' properties and conventions of use. There should also be evidence of an understanding of health and safety issues related to the use of the selected materials.

Students can show their understanding of the properties and characteristics of materials and their suitability for a given situation in several areas of the folio. This is an area of folios that has shown improvement over the years.

Comparative testing of materials through physical testing methods is very common as is the testing of processes on materials. Students can provide brief reports on these activities and use their results to select the most appropriate materials and processes for their products.

Students can show their awareness of safety issues related to particular materials by including material safety data sheets and refer to specific hazards and control measures used.

Understanding of materials in some cases was further enhanced through ongoing testing of materials documented in the production journal.

Teachers should encourage and foster their students' innovative approaches to gaining and demonstrating their understanding of materials characteristics and properties.

Helpful hints

- As a quick exercise have students define the required properties of the materials for a range of common products; do the same for the product they are working on.
- Use a pro forma for material testing and reporting in Units 1 and 2 and use the same pro forma for tests done in Unit 3.
- Use a selection chart to compare a range of materials against the properties required that includes a statement to support conclusions on the suitability of materials.
- Testing of materials can be an ongoing part of the development of the product as new situations arise.

The extent to which the **production work** and **accompanying documentation** demonstrate**:**
Criterion 6
Skill in the application of processes.

- Range of processes used.
- Degree of difficulty in the processes used.
- Ability to record progress and modifications.
- Efficient use of time during production.

To score a **Very High** on this criterion the student demonstrates a very high level of competence in the application of a wide range of processes, including processes with a high degree of difficulty. There should be evidence of an advanced understanding of the relationship between the production sequence, processes and timelines.

There should also be evidence of clear, concise and regular recording of progress/modifications and deviations from the production plan with detailed, justified explanations provided for modifications.

As students are tackling more complex production tasks they are using more processes and more advanced processes that require a high degree of skill.

When students take on a complex project they generally score well on this criterion. Teachers look for the demonstration of competence in a range of processes and the degree of difficulty of the processes. The work reviewed showed that this area is generally being done well. In some cases the simplicity of the product may not allow students to score a very high. Teachers need to make students aware that this will be the case.

Reviewers reported examples of student work of a very basic level. If the student has a low level of competence shown in this area due to a lack of experience or any other reason then teachers need to mark the work appropriately.

Helpful hints

- List processes generally used for the materials in which students are working. Have students tick the ones that they are intending to use. Point out that they could change due to unforeseen circumstances.
- Make sure students understand that they may not score highly on these criteria if they do not use a range of processes or if the processes are not complex.
- Regular reference to the time lines/breakdown of tasks in their work plan ensures students are accountable for their use of time.

Criterion 7
Skill in the use of tools, equipment and machines.

- Identification of hazards, risk assessment and control.
- Range of tools, equipment and machines used.
- Safety in the use of tools, equipment and machines used, some of which are complex.

To score a **Very High** on this criterion the student should demonstrate an advanced understanding of the identification of hazards, risk assessment and control related to the use of tools and equipment during production. An advanced level of skill/technical competence in the correct use and maintenance of tools and equipment/machinery during the production work is shown. The student also demonstrates an advanced understanding in the safe use of a wide range of tools, equipment and machines and works in a safe and effective manner during all production activities.

This criterion assesses students' ability to select and use a range of tools and equipment efficiently, competently and apply appropriate safety practices. Teachers need to ensure they make ongoing assessment and fill out the Additional Teacher Comment sheet in case student work is reviewed by visitation.

A student may have a product that is a good simple solution to the problem outlined in the design brief. However if it does not require the use of a range of tools and equipment and high level of skill, teachers need to inform the student that the work will not score highly.

Helpful hints

- Document tool and machine use whether it is developmental work, skills work or production tasks.
- Fill out the Additional Teacher Comment sheet available on the Design and Technology page of the VCAA website<www.vcaa.vic.edu.au/vce/studies/designtech/destechindex.html> to record skills and competencies.

Criterion 8
Skill in completing the product to specified and accepted standards of quality.

- Comparison of product to the preferred option, production plan and recorded modifications.
- Quality of finish and presentation of the completed product.
- Product complies with accepted standards.

To score a **Very High** on this criterion the product should accurately reflect the preferred option, production plan and recorded modifications in all aspects. The completed product should demonstrate a very high standard of finish/presentation and meets or exceeds the standards of quality as specified in the design brief and specifications.

It is very important that students specify the intended standard of quality for the product drawn from information in the design brief and specifications. Students are then accountable to complete the product to that standard. Students need to specify quality standards in their design brief, and refer to these in developmental work, design options and planning.

Helpful hints

- Define quality in terms of what is conventional for that design/materials area i.e. degree of accuracy required, quality of finish, fit, etc.
- Students need to specify if they are completing the product to a non-finished stage.
- All outsourced process must be acknowledged.
- Use the Additional Teacher Comment sheet.

The extent to which the **evaluation report** and **the visual display** or **the storyboard** or **multimedia presentation demonstrate:**
Criterion 9
Skill in evaluating and promoting the product.

- Use of client or end-user feedback and evidence from testing/checking to evaluate the suitability of the product.
- Use of established criteria to draw conclusions about how well the product meets the client/end-user needs
- Identification of areas for improvement.
- Production of a visual display, storyboard or multimedia presentation that promotes product features with consideration of the marketing mix.

To score a **Very High** on this criterion the student needs to make comprehensive and valid judgements about the suitability of the product and the extent to which it meets the intended requirements using all the previously established criteria and a range of testing and checking methods. There is a high level use of feedback from the client or an end-user to evaluate the product. Detailed recommendations are provided for improvements in the product. Relevant features of the product are clearly presented in an appropriate promotion to show an advanced understanding of the marketing mix.

This criterion covers one of the main changes to the new study design. The inclusion of the marketing component into the School-assessed Task has been one of the most interesting aspects of work under review. Students have demonstrated interesting approaches to this part of the task and showed a depth of understanding of marketing their

products using a range of media to highlight the features. Visual displays, swing tags, multimedia presentations and video have all been widely used to very good effect. Students who have advanced graphic skills produced a range of advertising material that was very professionally presented and included a thorough knowledge of the marketing mix. Many students are developing hypothetical design company logos and including them in the promotional material. This shows a willingness to take on the role of designers/manufacturers/marketers. This approach is encouraged. Teachers could introduce marketing concepts early in the year to help their students see the development of methods to be used when developing their work in a broader design context.

If students clearly state the testing/checking methods to be used when developing evaluation criteria they should be able to make judgements about how well the product meets the need for which it was designed. Students use a variety of methods of gaining client feedback to help make judgments about the product. Feedback can also be used to suggest areas for improvement.

In order to complete the evaluation and product promotion, students need to complete their production well before the end of term three. Teachers need to guide students to establish their overall time lines to ensure completion of this part of the task.

The importance of the design brief and specifications and establishment of well thought out evaluation criteria is highly important for students to score well in this criterion.

Helpful hints

- Have students examine a range of existing promotional material for an existing product similar to their own. Identify aspects of the market mix.
- Students could develop a design company logo early in the year and use it on the pages of their folio.
- Use a range of methods of collecting feedback from the client or an end-user to refer to when evaluating the product.
- Students need to record results of testing or checking their products as tangible evidence. They need to refer to these results when evaluating their product.

Criterion 10
Skill in evaluating the effectiveness and efficiency of the design and production activities.

- Effectiveness and efficiency of the production work plan (including references to safety practices).
- Use of the record of progress of production work and notes of modifications.
- Recommendations for improvement in the design and production activities.

To score a **Very High** on this criterion the student provides a comprehensive review of the efficiency of the design and production activities, including a thorough review of production work with reference to the record of progress of production work and notes of modification. The student should make insightful judgements and recommendations about the effectiveness and efficiency of the design and production activities.

This criterion is usually covered in a few paragraphs at the end of the folio. Students need to be encouraged to establish some evaluation criteria that allow them to focus on the effectiveness of the design and production activities. They can then respond to these leading questions. Students can get lost and go off track if they attempt to do this in paragraph form.

Very innovative approaches to this part of the task were observed. Many students now use a journal as a pictorial record of the development of their production. Increasingly students use ongoing evaluation of the production processes to make judgements about the effectiveness and efficiency of the activities. They identify areas for improvement on an ongoing basis during production as well as commenting at the end. This enables students to evaluate these aspects immediately and while they are fresh in their minds.

It is pleasing to see students taking some responsible risks in the structure of folio work. This captures the innovative and iterative nature of design inherent in this study.

Helpful hints

- Students who keep a detailed journal of their design and production activities have plenty of information to draw on when they respond to this part of the evaluation.

- Have students refer to timelines and other aspects of their production plans when addressing this part of their evaluation.
- Evaluation of the design and production activities should be ongoing. Make sure activities are documented.
- Write the evaluation as a technical report rather than as an essay.
- Make reference to gathered information.

A note on marking.

Many teachers are familiar with students who are unmotivated. It is difficult to find the magic pill that encourages all students to do their best. It is important that teachers mark the work of these students appropriately and according to the criteria. Cross marking within a school is vital to a school's quality assurance and should not be compromised under any circumstances. Teachers experiencing problems are advised to attend professional development and collaborate with colleagues when it comes to marking.