This report is provided for the first year of implementation of this study and is based on the coursework audit and Victorian Curriculum and Assessment Authority (VCAA) statistical data.

UNIT 3
GENERAL COMMENTS

In the first School-assessed Coursework audit undertaken for the VCE Information Technology Applications Study Design (2011–2014) it was important to check that the assessment tasks submitted complied with the outcomes, the key knowledge and key skills in the study design as well as reflecting the major changes from the previous study design. These include the:

- four stages of the problem-solving methodology and its associated activities
- change of focus from virtual teams to online communities in Outcome 1
- requirement for students to design and develop a RDBMS Outcome 2.

All tasks must allow students to demonstrate the highest level of performance.

A high percentage of schools used commercially produced assessment tasks. Few schools developed completely new case studies and those that did tried to tailor the case study to suit the experiences and interests of their own students. A number of schools used case studies developed for previous study designs with varying success. Frequently the case study was not successfully updated to reflect the changed focus and this approach struggled to rework the questions and assessment criteria to satisfy the requirements as outlined in the study design.

A number of case studies were unrealistic and therefore inappropriate. It is important that the case studies reflect real organisations and pose real problems and do not trivialise the outcome.

Integral to the new VCE Information Technology Study Design is the introduction of a newly designed problem-solving methodology. This methodology is used as a systematic process for developing information solutions to information problems.

The details of the problem-solving methodology are explained on pages 16 to 18 of the study design and their importance, reach and breadth in the development of all assessment tasks cannot be overstated. Although many schools attempted to include and address the stages and activities involved, equally many schools did not, and as a result, errors were detected. A few schools appeared to not understand that the problem-solving methodology underpins the requirements of the study design.

The study design clearly outlines which stages of the problem-solving methodology need to be applied for each outcome. Several schools did not refer to study design and applied the four stages in each outcome.

There also appears to be some confusion or lack of awareness of the activities associated with each stage. Many tasks that were seen in the review failed to adequately address the required two activities at the ‘Analysis’ stage which are determining the solution requirements, and identifying the constraints on the solution. Note: in Unit 4 students must also address the scoping activity. It should also be noted that testing is entirely located at the ‘Development’ stage.
‘Evaluation’, the fourth stage in the problem-solving methodology is not required in Unit 3; however, many schools continued to include evaluation questions in their outcomes. Unfortunately the inclusion of questions that examined areas of the course not required meant that the weighting of the assessment task was a little skewed. This also denies students the opportunity to demonstrate their capabilities with respect to required knowledge and skills.

Overall, schools were able to successfully deliver Outcome 1 better than Outcome 2. Most schools used the same time allowance for both outcomes. There was a wide variance in time allowed across schools, however, ranging from 270 minutes to 900 minutes which was clearly excessive. The average time allowed on both outcomes was approximately seven hours (420 minutes).

There was less evidence of ‘undue assistance’ than in previous years in the form of additional material, hints, templates and prompts including in the assessment material.

In both Outcomes, approximately 50 per cent of schools allowed students to use notes in the assessment task with approximately 30 per cent of schools allowing dictionaries.

**SPECIFIC INFORMATION**

**Outcome 1**

On completion of this unit the student should be able to apply stages of the problem-solving methodology to create a prototype website that meets an online community’s needs, and explain the technical requirements to support the hosting of the website.

Task type: IT Solution and either a written report or a short-answer test.

In Outcome 1, students are required to create a prototype website to suit the needs of a particular online community in response to a design brief and data supplied by the teacher. Students are also expected to complete a report or short-answer test that explains the technical requirements of the host network.

Overall, there has been a successful transition from virtual teams to online communities to support collaboration, knowledge sharing and collective identity. Schools handled well the concept of a prototype website that represents the functionality, partial navigation options and user interface.

The problem-solving methodology stages required to demonstrate this outcome are ‘Analysis’, ‘Design’ and ‘Development’.

Most case studies allowed members of an online community to exchange information. Alumnae associations, theatre companies, sporting groups (e.g. snowboarders), truck spotters, furniture designers and even an 18 years old around-the-world solo yachtsman featured in the design briefs.

There were a number of instances where the assessment task was incorrect or incomplete.

It is expected that students select from teacher-supplied data which could include text, images, video and sound files. There was a commonly occurring problem with students not being given the input data as required by the study design.

Students are also expected to select the websites from the annually published list (in 2011 it consisted of blogs, chat rooms, forums, social networking and wikis) and students should not be instructed on which type of website to produce. Although one type of website is sufficient, many schools allowed students to develop several types of websites which is also satisfactory. However, where schools allowed students to develop all websites the volume of work set is too high. The website should depict the major features of that type of website.

Key skill three states that students are required to select and apply design tools. In many cases students were told which design tools to use. Also specific design tools must be chosen by the
student to represent both the functionality and appearance of the prototype website and not just appearance. Design tools suitable to represent the functionality of the prototype website include storyboards and site maps. Design tools suitable to represent the appearance of the prototype website include layout diagrams and annotated diagrams/mock ups.

In any outcome, the key skills are directly related to the key knowledge dot points. Therefore although evaluation criteria are developed at the Design stage of the problem-solving methodology, students do not have to produce evaluation criteria in this outcome because evaluation is not a key knowledge dot point.

The written report or short-answer test (10 marks out of the 50 marks allocated) caused a number of concerns. It should be noted that only one form of assessment is required (i.e. either a test or report) and whichever form is chosen, the questions must relate to the case study. The report or test must justify the website to suit the online community’s needs and explain the technical requirements for hosting the website. In a number of cases, students were asked to evaluate the website instead. The Evaluation stage of the problem-solving methodology is not required in this outcome.

Most schools chose a written report instead of a test. However, it should be noted that a written report should not include lines, multiple-choice questions, closed questions or individual questions.

Assessment

In the samples reviewed for the coursework audit, most teachers provided students with a marking scheme used to assess the tasks. Many teachers had adapted the VCAA performance descriptors, which appear in the assessment handbook, to provide mark allocations for specific tasks; however, most students were not presented with the performance descriptors themselves. Students were able to see how many marks apply to each question and prepare their answer accordingly.

There were a number of instances where teachers developed their own marking schemes and did not refer to the assessment handbook and these were generally not compliant.

Overall, the weighting of criteria was fair and equitable; however, there were some schools that allocated marks to questions that were not required by the key knowledge or key skills.

Outcome 2

On completion of this unit the student should be able to design, and develop using a relational database management system, a solution to an information problem, and discuss why and how data is acquired via websites.

Task type: IT solution and either a written report or a test.

In Outcome 2 students are required to design and develop a relational database management system in response to a design brief that includes an analysis of the information problem. Students also are required to complete a written report or test that discusses why and how data is acquired via websites.

The problem-solving methodology stages required to demonstrate this outcome are ‘Design’ and ‘Development’.

In the sample reviewed for coursework audit, it was obvious that the changes in this study design associated with Outcome 2 have not been understood well enough and therefore not successfully delivered.

There was a general lack of recognition in the significant shift from the previous study design regarding relational database management systems (RDBMS).

Most case studies were appropriate for a RDBMS where the data could be typically acquired through websites. Many design briefs were based on online sales including shoes, sporting
It is a requirement of Outcome 2 that students are not given normalised data. Far too frequently students were given data in multiple tables or lists which clearly indicated the tables, fields and relationships that were required to produce the solution.

When schools used tasks from previous study designs, there was frequently an issue with the tasks not being successfully rewritten and reworked to suit the requirements of the new study design. This in particular related to the design and development of a RDBMS. Also several schools continued to include Project Management questions. Project Management is not included in the study design and unfortunately many marks were wasted in this endeavour.

It is also clearly stated in the study design that there is an emphasis on the design and development stages of the problem-solving methodology and that the analysis of the information problem must be stated in the design brief.

Many schools required students to perform an analysis rather than supply it in the case study. If in fact an analysis was given to the students, it did not necessarily cover the required two activities of stating the solution requirements and the constraints.

For Outcome 2 students are required to manipulate and validate data, and retrieve information through searching, sorting, filtering and querying data sets. There is no requirement in this outcome to produce input forms or reports. Many schools required students to produce input forms and a variety of reports and allocated a significant amount of marks to these tasks. Reports are produced in Unit 4 should the school decide to teach databases at that time instead of spreadsheets.

The number of queries requested of students also differed greatly across schools ranging from 1 to 15. Many tasks required students to demonstrate the same skills in their queries multiple times and care should be taken to not increase student workload by setting repetitive tasks unnecessarily. If more than one query is set, each should be unique and output a different subset of data.

For Outcome 2 students are required to prepare a written report or complete a test that discusses how and why data is acquired via websites. Most schools selected to use the case study from the design brief as the basis for the written report or test; however, this is not a requirement of the outcome. Most schools reviewed in the audit sample chose a test to assess this task.

Students are expected to undertake the activities within the ‘Design’ and ‘Development’ stages only.

Many schools, however, required students to perform an evaluation of the information solution with a significant amount of marks awarded and this does not satisfy the requirements of the study design.

Students are required to select and apply design tools and techniques to describe data types and to represent the functionality of the solution in this outcome. Frequently students were told which design tools to use. Design tools to describe data types include data dictionaries and data structure diagrams and input-process-output (IPO) charts. Design tools to represent the functionality of the solution include entity-relationship diagrams and structure charts.

Assessment

As for Outcome 1, most teachers provided students with a marking scheme used to assess the tasks that was an adaptation from the VCAA performance descriptors; however, most students were not presented with the performance descriptors themselves.

Where teachers developed their own marking schemes there was little evidence they referred to the assessment handbook and these were generally not compliant.
Overall, the weighting of criteria was fair and equitable; however, there were some schools that allocated too many marks to questions that were not required by the key knowledge or key skills.

UNIT 4

GENERAL COMMENTS

In the first School-assessed Coursework audit undertaken for the VCE Information Technology Study Design 2011–2014, it was important to check that the assessment tasks submitted for Unit 4 complied with the key knowledge and key skills in the study design, and in particular addressed the major changes from the previous study design including:

- the four stages of the Problem-solving methodology and its associated activities
- the selection of either RDBMS or spreadsheet software for Unit 4 Outcome 1
- the inclusion of cloud computing in Unit 4 Outcome 2
- the introduction of two new laws; *the Spam Act 2003* (Part 1.3 simplified outline) and *the Charter of Human Rights and Responsibilities Act 2006 (VIC)* (sections 13, 14 and 15).

All assessment tasks must allow students to demonstrate the highest level of performance.

Many of the comments that follow were also reported in the Unit 3 Information Technology Applications Review.

The majority of schools used commercially produced assessment tasks. Few schools developed completely new case studies and those that did, tried to tailor the case study to suit the experiences and interests of their own students. A number of schools used case studies developed for previous study designs with varying success. Frequently the case study was not successfully updated to reflect the changed focus and also these schools struggled in reworking the questions and criteria to satisfy the key skills as outlined in the study design.

A number of case studies were unrealistic and therefore inappropriate. It is important that the case studies reflect real organisations and pose real problems and do not trivialise the outcome.

It is important to note that irrespective of the source, it is the teacher’s responsibility to ensure that the assessment task presented to their students meets the requirements of this new study design.

Integral to the new VCE Information Technology Study Design is the problem-solving methodology. This methodology provides a systematic process for developing information solutions to information problems.

The details of the problem-solving methodology are explained on pages 16 to 18 of the study design and its importance, reach and breadth in the development of all assessment-relevant tasks cannot be overstated. Although many schools attempted to include and address the stages and activities involved, many did not and as a result, errors were detected. A few schools appeared to not understand that the Problem-solving methodology underpins the requirements of the study design.

The study design clearly outlines which stages of the Problem-solving methodology need to be applied for each Outcome. In Unit 4 Outcome 1 all stages of the problem-solving methodology must be applied.

There also appears to be some confusion, or lack of awareness, of the activities associated with each stage. Many tasks that were seen in the review failed to adequately address the three activities at the Analysis stage; determining the solution requirements, identifying the constraints on the solution and determining the scope of the solution. These requirements
were clearly stated in the key skills. It should also be noted that testing is entirely located at the Development stage.

Overall, many schools were deemed non-compliant with the numbers across both Unit 4 Outcome 1 and Unit 4 Outcome 2 being relatively equal. There was a wide variance in time allocated for the tasks across schools. In Outcome 1 this ranged from 250 minutes to 750 minutes, with the average being 445 minutes. In Outcome 2 the range of time was from 48 minutes to 240 minutes, with the average being 83 minutes. This variation can be explained based on the selection of the task type: test, written report or annotated visual report.

There was less evidence than in previous years of ‘undue assistance’ in the form of additional material, hints, templates and prompts within the assessment material.

The number of schools allowing students to use notes and dictionaries in Outcome 1 was high and comparable to what was observed in Unit 3, with 55% allowing notes and 44% dictionaries. Outcome 2 saw a significant drop, as would be expected with a test being predominantly used, but 29% of schools still allowed students to use notes and 26% allowed dictionaries for this task.

**SPECIFIC INFORMATION**

**Outcome 1**

On completion of this unit the student should be able to use selected software to solve an ongoing information problem, and evaluate the efficiency and effectiveness of the solution in meeting the information needs of an organisation.

Task type: Information technology solution in response to a design brief, including user documentation, and either a written report or an annotated visual report.

In Unit 4 Outcome 1, students are presented with a design brief and are required to produce a solution to an ongoing information problem. The solution is produced using RDBMS or spreadsheet software.

Most schools presented assessment tasks that allowed students to produce either a spreadsheet or RDBMS and onscreen user documentation.

A key requirement of this task is that the solution must solve an ongoing problem and therefore must be capable of processing new sets of data.

The majority of schools chose spreadsheet software to demonstrate how an information solution could solve the ongoing information problem. A minority of schools prepared generic case studies that allowed students to choose which software they would use, with this approach being generally successful.

The majority of schools, irrespective of whether it was a spreadsheet or RDBMS solution, set tasks that allowed students to demonstrate the software skills listed by the VCAA (www.vcaa.vic.edu.au/vcaa/correspondence/bulletins/2010/July/vce_study.html#2).

Typical organisations represented in the design briefs included hair salons, party hire companies, real estate companies, web companies, shoe sales. Most solutions involved either wage calculations or online sales.

In developing the solution, students must complete all four stages of the Problem-solving methodology (Analysis, Design, Development and Evaluation) and must also produce onscreen user documentation to support the solution. This is the only time in the study design where all four stages must be followed.

Many schools were not able to set a task that required students to complete all three Analysis activities. In many cases, students were not required to identify the functional and non-functional requirements, constraints and the scope of the solution.
There were many areas of concern relating to the design stage. The study design requires students to select and apply appropriate design tools to represent the functionality and appearance of the solutions. This means that the designs of the spreadsheet solution or RDBMS, and the user documentation, needed to be created by the students themselves. It is also a requirement that the student selects the design tools – the task should not state the tools to use. In some cases, students were not only told which design tools to use but were even given templates to complete.

The selected range of design tools must also cover both functionality and appearance. Many of the given tasks required students to design for appearance only. Depending on the choice of software, different design tools could include Entity Relationship Diagrams (ERD), data dictionary and data structure diagram (RDBMS), Input Process Output (IPO) for spreadsheets and layout diagrams or annotated diagrams/mock-ups (either RDBMS or spreadsheets).

Another area of non-compliance was where the data was given to the students in a form that clearly indicated how the solution was to be produced, such as the tables and fields needed and screen shots of the final solution. In most cases these were deemed as students receiving undue assistance.

There were also several concerns relating to the evaluation of the solutions. It should be noted that the evaluation criteria, which are developed at the Design stage, must relate to the efficiency and effectiveness of the solution in meeting the information needs of the organisation. Many schools did not set tasks that explicitly required students to demonstrate these key requirements.

The vast majority of schools required a written report for the evaluation, with a minority nominating an annotated visual report. Just annotating a hardcopy of a solution in some instances did not allow the students to provide sufficient evidence of achievement.

Most schools correctly advised their students to produce onscreen user documentation developed with either multimedia or web authoring software. The user documentation could take the form of a quick start guide, tutorial, manual or content-sensitive help. Most schools required students to produce a quick start guide. Many schools, however, did not include that the user documentation must also be designed, tested and evaluated, and not just the software solution. This is clearly reflected in the use of the term ‘solutions’ in the study design. It should also be noted that students do not have to create full user documentation for a solution; writing documentation for a selection of features is sufficient.

**Assessment**

In the samples reviewed for the coursework audit for Unit 4 Outcome 1, most teachers provided students with a marking scheme used to assess the tasks. Many teachers had adapted the VCAA performance descriptors, which appear in the assessment handbook. These provide mark allocations for specific tasks, however most students were not presented with the performance descriptors themselves.

Frequently the assessment criteria or marking scheme submitted for review did not match the instructions given to students. Students must be informed of how marks are allocated and teachers must ensure that the instructions actually match the criteria on the criteria sheet or rubric.

Where teachers developed their own marking schemes there was little evidence they referred to the assessment handbook and these were generally not useful.

**Outcome 2**

On completion of this unit the student should be able to evaluate the effectiveness of strategies used by organisations to manage the storage, communication and disposal of data and information, and recommend improvements to current practices.
Task type: written report or a test or an annotated visual report.

In Unit 4 Outcome 2, students are required to focus on how organisations ensure the integrity and security of data and information when they are stored, communicated and disposed of. They have to evaluate the strategies used to minimise accidental, deliberate and events-based/technical threats, and recommend information management strategies to improve current practices.

There are similarities between this outcome and the one from the previous study design. As a consequence, many teachers used previous tasks but they did not always update the tasks to accommodate new content including cloud computing, two new laws and the resolution of legal, social and ethical tensions.

The new study design also requires more than one organisation to be included in the assessment task. This is a significant change from the previous study design but most schools did not incorporate this change in the task.

The most successful and common delivery method for Outcome 2 was via one case study with extended questions (in the form of a test). Those schools that chose to include multiple choice questions were generally not compliant because these questions tended to avoid the organisational focus that is required and merely asked students to recall generic theoretical facts.

The case studies generally allowed students to achieve at the highest level of performance. A range of organisations were presented for review including dental supplies, real estate agencies, sporting clubs, car sales, physiotherapy clinics, jewellery stores and child care agencies.

Many schools were deemed non-compliant because they failed to allow students the opportunity to demonstrate all key skills, which are integral to demonstrating the outcome.

New content in Outcome 2, in particular cloud computing and the two new laws, Spam Act 2003 (Part 1.3 simplified outline) and the Charter of Human Rights and Responsibilities Act 2006 (VIC) (sections 13, 14 and 15), were frequently avoided or not addressed at all. While there does not have to be a 1:1 relationship between questions and key knowledge and key skills, opportunities should exist in the task for students to make reference to cloud computing when recommending improvements to current practices. Similarly, students should have the opportunity to explain how legal requirements affect information management strategies.

In many situations the case study did not allow students to propose strategies to minimise and resolve legal, ethical or social tensions between stakeholders that arose from the information management strategies. Tensions may have been identified but students were not required to recommend the strategies to resolve this issue.

Students were frequently required to evaluate the information management strategies but at no time did they produce the actual criteria on which to base their evaluation. These criteria included integrity of data, security, and ease of retrieval and currency of files.

Although many schools recognised that the case study must focus on storage, communication and disposal, too frequently students were not required to specifically respond to each of these. Case studies that clearly identified each of these requirements would have assisted students in being able to perform at the highest level.

Assessment

In the samples reviewed for the coursework audit for Unit 4 Outcome 2, most teachers did not submit a marking scheme. This was because the most common task type was a test and the individual marks were written on the actual test.
Many teachers had adapted the VCAA performance descriptors, which appear in the assessment handbook, to provide mark allocations for specific tasks; however most students were not presented with the performance descriptors themselves.

Where teachers developed their own marking schemes there was little evidence they referred to the assessment handbook and these were generally not compliant.