# Information Technology

2013 Chief Assessor's Report

Government of South Australia

SACE Board of SA

# INFORMATION TECHNOLOGY

# 2013 CHIEF ASSESSOR'S REPORT

## OVERVIEW

Chief Assessors' reports give an overview of how students performed in their school and external assessments in relation to the learning requirements, assessment design criteria, and performance standards set out in the relevant subject outline. They provide information and advice regarding the assessment types, the application of the performance standards in school and external assessments, the quality of student performance, and any relevant statistical information.

## SCHOOL ASSESSMENT

### Assessment Type 1: Folio

Folio tasks this year have been well supported with evidence of research demonstrating 'knowledge and understanding' and 'analysis and evaluation'. Students who produced a case study of an information system were able to demonstrate clear understanding of the aims, outcomes, components, constraints, and feedback mechanisms in a recall context. Students who performed at a higher standard were able to evaluate and analyse current practices and comment with recommendations and improvements. These students were able to demonstrate at a high performance level and in a way that was effective, comprehensive, and insightful against the specific features. It is advisable that students who are undertaking this type of assessment have physical contact with the business they are developing the product for and do not use information systems that are hypothetical or based online as a point of sale.

Students who presented essays for the option topics and used the Harvard referencing system within their folio work were able to demonstrate highly effective communication for this assessment type. When the scenarios were scaffolded to address the key specific features, they enabled students to demonstrate 'knowledge and understanding' and 'analysis and evaluation' clearly. Students who were assessed using past papers showed a competent range, but were limited by task design.

It is important for teachers to ensure that folio tasks meet the requirement of the subject outline for the current year, which stipulates that there should be at least three folio assessments that cover both core topics and option topics. Therefore, the tasks can be designed to cover each of the core topics and both of the folios (four assessment pieces) to make up the folio component. The option topics may cover more than one topic. This must be clearly indicated to students and match the other two assessment tasks in terms of weighting and time allocation.

The 'information systems' and 'computer and communication systems' core topics can be combined into an assessment task and each option topic assessed individually. Teachers who used open-ended tasks written to encompass the performance standards enabled students to demonstrate their 'knowledge and understanding' and 'analysis and evaluation' at a higher standard.

It is vital that students are given scenarios to which they can apply their knowledge and understanding. Without these scenarios, students are likely just to recount facts and not address the 'analysis and evaluation' criteria.

The performance standards must be used in assessing student work. Each level of achievement describes the knowledge, skills, and understanding that teachers and assessors refer to in deciding, on the basis of the evidence provided, how well a student has demonstrated his or her learning. Teachers will make a decision about the quality of the student's learning by referring to the performance standards and assigning a grade between A+ and E– for the assessment type. Teachers are advised to give students feedback by annotating their work using the performance standards, rather than merely giving a 'tick' or no comments at all. Students given performance levels such as a C+, B– or A+ provided valuable feedback for students to focus on and improve. This also significantly helps verify the teacher's assessment during the moderation process.

## Assessment Type 2: Skills and Applications

Skills assessment tasks reflected a range of assessment activities conducted by students across the option topics. This year students demonstrated a balance across the assessment design criteria, allowing students to approach all of the specific features and demonstrate their learning against the performance standards.

Teachers must ensure that task cover sheets showing the assessed specific features and performance standard grids accompany each assessment item. It is also helpful for students if the tasks are clearly aligned to assessment design criteria, so they know they are meeting the requirements of the performance standards. Teachers who used B+, C– and other 15-point scale indicators when assessing student work enabled students to gain valuable feedback so that they could meet the requirements more successfully in the future.

Students performed well when previous tasks were adapted for their use; open-ended tasks allowed students to demonstrate higher-level skills but sometimes they became overwhelmed by the complexity that was required. It is important for teachers to design tasks that include both core skills to demonstrate competency and optional skills to demonstrate higher performance in the A and B grades.

Schools varied in their practice regarding time allocation for individual tasks using a common assessment item; for example, some schools interpreted this as two lessons under supervision, while others gave three or more lessons with limited supervision and homework time. This raises the issue of fairness within the moderation process. Teachers are recommended to use the examination as a benchmark and aim for two hours of assessment work under supervision. Teachers are encouraged to modify sourced tasks to meet the teaching plan and the skills set of their particular cohort. Students must be assessed at a Stage 2 level against the performance standards.

Students performed to a higher standard when they were given well-constructed tasks that were guided but still allowed for initiative and a variety of solutions. Teachers were able to identify students working at higher level in the way they addressed the programming topics. Good programming assessment tasks incorporated nested constructs and a mixture of elements from the subject outline.

Relational databases used outcomes to show a range of criteria (singular and multiple), grouping, sorting, and mathematical calculations. The ability to desk-check algorithms across coding topics provided evidence of validation and evaluation of the outputs of an algorithm.
The work overall this year reflected a balance between the 'analysis and evaluation' and 'development and validation' criteria. Students were able to demonstrate their abilities in a range of written and practical assessments with the inclusion of validation videos using 'black box', 'white box' or 'grey box' techniques.

## Assessment Type 3: Projects

Students performed well this year, adhering to the five stages of the software development life cycle: problem definition, analysis, design, development and validation, and evaluation. Well-documented projects used subheadings that reflected the clear representation of the three to four outputs of the system.

Students who struggled in this assessment type found it difficult to meet the level of complexity that is required at Stage 2 and to therefore meet the performance standards at the higher levels. Teachers should ensure projects have the right level of depth and complexity before students engage in their development.

Students were able to demonstrate proficiency through the incorporation of recommended practices and techniques from the skills checklist. Relational databases demonstrated more complex query structures and the use of front-based input. Students who achieved at the higher grade bands did not use inbuilt wizards to produce their work. Teachers are advised to guide their students in how they choose their projects before starting documentation or development. Students who used multiple criteria and calculations (query, form, or report generated) achieved at a higher performance standard.

Programming topics reflected a stronger design phase of the software development life cycle. Students used a story board, individual annotated frames, and various forms of algorithms to design a solution to their problem definitions and analysis. Students are advised to verify their algorithms through desk checking as part of their design or validation. Providing validation videos to accompany the validation plan enabled students to achieve at a higher level. These videos authenticate a student's work and show that they have the skills to incorporate recommended practices, develop a well-considered validation plan, and work to a high level of accuracy.

It is advisable for teachers within the one school to ensure that there is diversity in student's project topics. Work presented from some schools used a common scenario and had guided outcomes that restricted their ability to achieve at the highest level.

Teachers are advised to indicate the student's grade against the performance standards and give specific feedback. This also enables moderators to accurately and quickly verify where students have achieved against the performance standard.

## EXTERNAL ASSESSMENT

## Assessment Type 4: Examination

The examination consisted of a range of short-answer and extended-answer questions, supported by one page of A4 hand-written notes that the students can bring into the examination room.

While the number of students achieving an A+ in the exam has increased over previous years, there are still a large number of students reciting definitions and not giving answers that fit the context. Teachers need to emphasise to students the importance of reading all the instructions on the paper to ensure that they are considering the correct data and answering the correct question. Students must examine the number of marks available for each question and then consider the detail or structure of their answer in order to have the best possible chance of gaining the maximum marks available.

Students are advised only to answer the two compulsory core sections of the exam and the two option topics that they have studied. While each option topic has entry-level questions for those who have not studied it, these can distract the student and reduce the time they spend on the rest of the examination. Students who answered more than two option topics struggled to maximise marks into the higher-grade bands. The final examination still had a disproportionate number of E band students in terms of the guidance provided by teachers and the effort put in by students.

### Question 1

(a) Many students only identified the parts of the information system (IS) and did not describe their function. The most common correct responses were for hardware (camera), data (rego #), and people (Izak). Responses regarding software and procedures were often vague and did not relate to the red-light camera system scenario. Students who received good marks gave a relevant example and showed how it identified the driver who drove through the red light; (such as, data — date/time, photo, rego #). Some responses included the meaning of each element of an information system, than transferred it to the red-light camera context.

(b) Responses that did not state a benefit to the government authority — but instead identified a benefit to drivers or the public — attracted no marks because they did not directly answer the question.

(c) Most students recognised that the system would create safer driving conditions with fewer accidents, because drivers would become aware of the red-light camera at the intersection. Some students confused the red-light camera with a speed camera; although they stated that drivers would slow down, they needed to mention that this was due to avoiding going through a red light rather than just general speeding.

(d) Students usually correctly identified at least two pieces of data. The most common error was to include the speed of the car, which, in this context, was not relevant.

(e) Most students were able to think beyond the hardware and software constraints as directed by the question. They referred to constraints such as to weather

conditions, vandalism, cars without number plates, and incorrect driver details in the information system. A few focused on facial recognition of drivers, which did not fit with the scenario. These students probably confused the purpose of the OCR (optical character recognition) software referred to in the question. Some students still gave 'power failure' as an answer.

(f) Students sometimes mentioned 'grandfather-father-son' without really explaining what this term means. The better responses focused on the procedure (as the question asked) which included reference to who/ how often/what/where the backup will be done and stored.

**Question 2**

It was obvious when students copied a pre-prepared response from their notes because they did not relate it to the scenario used in the question. Terms such as 'the data' and 'controls the processing' did not apply to the red-light camera processing. In fact the poor responses often included the function of the component in the 'data' section.

The 'output' aspect of question 2(a) was reasonably well answered. The most common correct responses referred to the taking of the picture, or the transmission of the photos for processing and subsequent sending of the infringement notice.

Very few students recognised the relationship between the control unit, secondary storage, and primary memory at start-up/loading of software. Most students recited information about RAM being volatile, the secondary memory being permanent, and the role the CPU components play when a car goes through a red light. Better responses referred to the role of the control unit instructing the transfer from secondary storage to the application, into Primary Memory and, when operational, sending a signal to the server that it was operational once the self-checks had occurred.

Students struggled to use the embedded processor in context. Teachers are advised to instruct students on how the components interact so students can provide responses with more depth than just a definition.

**Question 3**

There were some very good responses and greater evidence that students knew the basic concepts behind communication systems.

(a) Most students answered this question very well. The poorer responses used general terms such as electro-magnetic waves or wireless signals. Some students described the path the signal would take rather than how the media transmits data.

(b) This question was generally well answered. Students knew that optic fibre uses light pulses to transmit data, that it has a higher bandwidth, is more secure and the signal doesn't degrade as it does for a copper cable. The better responses linked these facts to the scenario such as larger bandwidth allows more users to connect at the same time. The poorer responses just listed the basic transmission facts instead of outlining reasons as well.

(c) Many responses focused on the presence of a railway line and that digging a fibre cable underneath would be expensive, or would mean having to bend the

fibre. A number of students recognised that providing fibre for only 400 people would not make it cost effective, but very few went on to say that the termination of a fibre run is problematic. The word ‘difficult’ in the question was not read by the students who wrote about the cost of running fibre to the town as they focused on expense rather than the difficulty of splicing a fibre backbone cable.

(d) (i) Most diagrams were reasonably accurate. Common mistakes made by students were drawing a wireless link as a solid line, connecting the printer to the desktop instead of the switch; swapping the router and switch around, or leaving out one or two of the components (possibly because they copied another diagram from their notes). A few students included modems and hubs even though they were not mentioned in the question.

(ii) and (iii)
Almost every student answered these questions in general terms. Students wrote about a router on the internet rather than one in Jack’s network, and only a few students referred to it translating the IP address of the data packets to those used by Jack’s home network. Likewise for the WAP (wireless application protocol) — most responses referred to the device allowing wireless devices to connect to the home network.

(iii) This question was generally well answered. Most students knew that a client-server network has greater overheads, with extra hardware and software, and that this would not suit a small home network of only two computers.

(e) The good responses used technically correct language; for example, TTL (time-to-live) was answered in terms of the number of router hops that were allowed before the packet was no longer transmitted. Poorer responses referred to the time the packet was allowed to circulate the internet (in milliseconds) before it (the packet) deleted itself. It was disappointing that students included the sender’s address when they were told not to. Checksum and ACK (acknowledge character) were not well understood. The packet ID, time and receivers address were often explained quite well. Students have a clear understanding of the reassembling of packets by ID. Poor responses included reference to TCP, FTP, and IP which were not part of the given packet header.

(f) This question was generally well answered. Students knew that ‘https’ means a secure transmission protocol and that encryption was used to scramble data so it cannot be intercepted. Many students scored two marks but missed out on the third mark as they did not refer to the use of public/private key pairs which provide the tools for encryption and subsequent decoding. A number of students referred to SSL as the protocol for secure online transactions

(g) Students wrote mostly correct responses to the advantage of Jack doing his Senior First Aid Certificate online, albeit a general response such as ‘can study anywhere at any time without having to leave his house’.

Regarding the disadvantage of studying online, about half the responses acknowledged that it would be impossible for Jack to perform any practical work for the course. A number of responses incorrectly said he couldn’t get any feedback from the instructor, whereas this could be given via email or an online chat/video session. There were also quite a few responses about identity theft and the dangers of going online, which were not relevant to the question.

**Question 4**

This question provided students with a good opportunity to show their understanding of the roles of IT personnel, but it was generally not well answered. Some students did not even attempt the question. Students who did not name the specific roles often wrote in general terms about the importance of verifying that the system works, rather than looking at it from an information system programming or database perspective. The importance of training users was often mentioned; however, the errors were clearly stated as being incorrect calculations, which means that the software of the information system had inherent problems that needed to be fixed.

Students who scored good marks in this question usually wrote about the following IT personnel and accurately described their role in the problem-solving process.

- Systems Analyst — this person would identify the nature of the problem and start the documentation process that would be required to correct the problem
- Software Engineer — this person would develop a solution to the problem and write the specifications that outline how the information system would need to be changed to solve the problem
- Programmer, Database Programmer — this person would change the code of the software and/or data structures that would result in the correct values and calculations being performed
- Testing Team —this person or group of people would check the information system by using a set of pre-determined values that would confirm the information system will produce the correct results for all possible situations.

Students who gained full marks for this question not only mentioned the roles the above IT personnel perform, but also discussed how they would work together to solve the problem.

**Question 5**

(a) Students demonstrated a good understanding of the reasons why data should be stored in several tables, with many of them stating the need to avoid data redundancy so that details are not repeatedly stored.

(b) Most students correctly identified the data type for the PO_Date and quantity fields as date/time and number respectively, but many students incorrectly stated the data type for the C_Phone field as number, which cannot store spaces in between the digits.

(c) Most students clearly explained the nature of the many-to-many relationship between Table B and Table D by stating that each purchase order can contain many cheeses, and each cheese can appear on many purchase orders. Some students failed to recognise this relationship and described a one-to-many relationship instead.

(d) Many students correctly identified Table C as a transaction table, but they also needed to explain its function in terms of it solving the many-to-many relationship.

(e) It was surprising that many students who answered parts (c) and (d) correctly did not gain full marks for this part. The most common mistake was to draw the links with the ‘many’ part of the relationship pointing towards Table B or Table

D instead of towards Table C, the transaction table. Most students used the Chs_CheeseID field to link Table D to Table C, but many chose to create their own ID field in Table B rather than use the existing PO_Number. Some students did not label the type of link between the tables but just drew straight lines.

(f) About half the students correctly used the C_ID field in Table A to link it to Table B to create a one-to-many relationship. Some students added nothing extra to the diagram, while a few students added the C_ID field to Table C.

(g) Very few students scored full marks for this part as they forgot to include the SUM function to calculate the total cost of an order. Many students picked up one mark by multiplying the quantity by cost price, but only a few students included use of the Chs_Markup% field in the calculated field.

(h) A common mistake made by students was to simply state that the query needs to be sorted without mentioning the order — ascending is incorrect, as the list of customers had to start with the most recent order.

(i) The better responses wrote that a primary key by itself separates the customer's personal details such as name, address, and phone number from the key. This protects the privacy of its customers as only their key is transmitted overseas, not their personal details.

(j) Most students misinterpreted the phrase 'versions of files' and wrote about the reason for backing up database files. While these responses contained valid information, they did not answer the question, which aimed to test the student's understanding of version control. Correct responses referred to being able to return to a previous version if errors occurred while designing or developing new features of the database or changing the databases' interface.

**Question 6**

(a) (i) Many students did not read the question carefully; instead of writing about advantages to the software developer, they wrote about advantages to the software user. This was evident as these students often wrote that the use of constants 'means that they don't have to type in the price of the coffee each time'. The better responses acknowledged that the use of constants enables the software developer to not only fix the price of coffee types within the code, but it also enables the price to be changed in one place — at the start of the code (making it easier to find). This avoids searching all the way through the code as would be the case if the price had been embedded as a value in each calculation.

(b)

(ii) This part required the students to look at how the variable 'CoffeeTypes' is used within the code so they could select an appropriate data type. The better responses nominated an integer or byte data type as they saw that this variable was used as the ending value of a FOR loop, which starts at 1 and increments up to 3. Hence this variable would have to store whole numbers, as can be done by an integer or a byte. Students who did not read the question carefully responded with 'string' as they did not look at the code. They associated this variable name with the types of coffees being sold, such as latte, which consists of characters that can be stored in a string variable.

(iii) Students who answered the previous two questions correctly usually answered this part correctly too, because they read the code thoroughly and knew the coding syntax that indicates an array structure.

(iv) The better responses related a program's efficiency to the number of lines of code it uses, so to make a program more efficient, less lines of code will be required. They then went on to complete the explanation by stating that an array structure in combination with a loop will achieve this as the loop's counter will indicate the position within the array that is being processed, as all the elements within the array share the same variable name.

(c) The part was answered fairly well. Some students circled each line of code within each control structure despite the question asking them to draw a circle around the structure.

(d) Many students answered this part correctly and identified the condition as 'TypeOfCoffee <> 0' while other responses wrote the condition in words 'Type of coffee does not equal zero', which was also a valid response.

(e) It was obvious which students knew how to correctly desk-check a modular algorithm, and which students guessed what the algorithm was doing. Even though students may not have followed the algorithm exactly, many of them worked out the number of each type of coffee that was sold and calculated the revenue correctly.

(f) (i) It was encouraging that most students attempted to answer this part; this means they have had experience with writing their own code, especially with array structures. The best responses used a single FOR loop to add the number of large and small coffees sold from each element of their respective array, and then used these array elements to calculate the total cost by multiplying them by the price of that sized coffee.

(ii) Students responses varied in this part. The poor responses gave no thought to the logical placement of the code they proposed in part (e) (i), and often placed the code before all the data had been processed, or in the middle of the processing when the totals could not be finalised. The better responses placed their code as the last part of the code in the 'process_sales' module, or even in the 'display_results' module.

(g) The perceptive responses stated that the actual processing parts of the algorithm are the same for any business and that it could be customised for other businesses through an initialisation process.

**Question 7**

(a) (i) The responses to this part were usually accurate, mentioning multimedia elements such as sound, a moving text box, a vibration, or a visual animation.

(ii) Students often scored one mark as they wrote about one consideration. The question asked for 'considerations' and, being worth two marks, the student needed to outline two considerations to be awarded full marks.

(iii) This question was generally well answered and required the students to apply their knowledge of 'user engagement' to this racing context. To achieve full marks for this part, the student had to explain the interactive feature, which required a detailed response in relation to the game and user engagement.

(b) (i) The responses for this desk-check were varied, with many students not following the statements in the INITIALISE_RACE module that set each toad's starting .x position to 30 and the values of winner to false and winnerToad to 0. It is important that students read the algorithm and make a note of the order in which each module is called by the main module and only adjust the value of variables when the code tells them to do so. It is important that students follow the algorithm to its end, as some students missed the last step and once the first toad crossed the winner's line, they did not process the other two toads' last jump.

(ii) This question was answered mainly by the students who completed the previous desk-check. Most of these students realised that there was a problem identifying the correct winner of the race.

(iii) Students who answered this part usually wrote that the algorithm should either have a way of resolving a tied result, or be able to determine who crossed the line first. The better responses reflected upon the final value of each toad's .x position and the one with the lower value should be declared the winner.

(c) The responses for this part were often written using actual code. Students demonstrated a general understanding that the winning toad had to be made visible and moved to the podium's position by setting its .x and .y values, with the other toads being hidden by setting their .visible property to false. The weaker responses did this with many lines of code as they did not use a FOR loop to make the code as efficient as possible.

(d) Student responses indicate that they are generally aware of copyright issues that are relevant to programming multimedia applications. One reason why students often did not achieve full marks for this part is that they did not supply enough detail in their explanation for 5 marks. The question asked for the issues to be discussed, not just listed or stated.

**Question 8**

(a) Most students correctly identified HTML elements such as a button or a check box in this interface.

(b) Likewise, most students correctly explained that a radio button allows only one option to be selected, which would be inappropriate in this context, as more than option may need to be selected.

(c) (i) Students demonstrated a good understanding of the term 'invalid data', as they often suggested negative numbers for the length or width of the roof, or characters such as 'ten' that could not be processed by a calculation.

(ii) Most students who responded with negative numbers for (c) (i) correctly identified that the output error would be a negative amount for the quote, especially if only one of the inputs was negative. On the other hand, students who responded with character inputs for (c) (i) did not always give the correct output error, which is that no result is possible and NAN (Not A Number) would be displayed in the quote amount field.

(iii) This part required two error checks to be stated. Often, students described only one error check and hence scored only 1 mark instead of two marks. Correct responses stated that one error check was to ensure that only numbers would be accepted; and the second was to ensure that the numbers entered were greater than zero.

(iv) Most students correctly suggested a pop-up box via an alert that would display a message informing the user of the error. Other students mentioned that an audible beep combined with an alert message would also be appropriate.

(d) (i) The algorithms written by the students were usually logically correct and would calculate the cost of the quote. Some responses included the use of constants for the installation fee and the control unit that were used later in the algorithm.

(ii) This part was very well answered, with most students able to show the calculations required to determine the quote cost for this customer. This showed that students understood the term 'validate'.

(e) Students were given the opportunity to write a longer response so that they could demonstrate their understanding of the implications of providing an online quoting system in this context. The good responses focused on the term 'potential customers' and wrote an explanation that was for the business, not the customer.

(f) (i) Students demonstrated a good understanding of the roles that cookies play in a web-based information system. Common responses stated that the cookie would enable a previously requested quote to be re-displayed on the screen without the client having to re-enter their data.

(ii) Most students recognised the possible infringement of privacy in this context, as a cookie does not discern between users of a computer, especially if it is a shared device.

(g) The students who attempted this part of the question wrote code that varied in its efficiency. The better responses referenced an array structure, which stored the daily power generated, as well as a FOR loop to process the data stored in the array in an efficient manner.

**Question 9**

(a) The better responses focused on the advantage to the school instead of advantages to students or parents. Students who understood this wrote that the school did not need to update its main page every day when its events changed, as these changes could be pushed onto the main page from an electronic calendar.

(b) The better responses acknowledged the efficiency that comes with dynamic elements; these do not have to be manually changed and the school uses less resources which makes the process more efficient. Few students linked the dynamic element to a database of events which, once set up, required little manual intervention.

(c) Many students answered this part from a general website perspective rather than from a dynamic website point of view. Students who had the latter viewpoint recognised that an enrolment page could be written using a static web page with HTML as its content would not change very often.

(d) (i) Students were able to sketch a form that contained the four required elements reasonably well. Most students recognised from the given code that a drop-down select box, two text fields was required. The better responses were able to correctly interpret the table structure present in the code and organised these elements in four columns and five rows.

(ii) Most students were able to correctly identify the data used by the form.

(iii) The students who correctly identified the data in part ii) were able to state that it would be sent to the logon server to be verified against a list of valid users.

(iv) The better responses suggested a proper filename for the file that would verify the user's data. The poorer responses often left out the extension part of the file's name, or gave a general filename that did not demonstrate understanding of server-sided processing.

(v) Most students were able to write code that described the process of verifying a user's login credentials. The better responses wrote well-indented and logically correct code that used an IF statement with a condition that tested the validity of the user's credentials.

(vi) The responses to this part were varied in terms of the amount of technical detail that was included in the answer. Students who knew the process referred to terms such as SQL server, authenticate, database and credentials, whereas the weaker responses used general terms such as 'checking if they are registered users'. Students must look at the number of marks for each part and write a response that has enough detail to earn these marks. This was often the cause of students not achieving full marks for questions like this.

(e) (i) The better responses wrote about each of the three dot points in the question. The poorer responses answered in general terms by stating that their access rights would prevent the user from accessing other students' information.

(ii) Students answered this part better than they did for part (i), as most of them were aware of the role forums play in dynamic websites. This enabled them to describe how parents could provide feedback to the school by posting comments in a parent forum. Other responses described how parents could update the personal details of their children by adding extra medical information or changing address and contact details.

## GENERAL COMMENTS

Students demonstrated higher performance standards when given the opportunity to solve problems in various ways for a particular scenario. Teachers who develop assessment tasks with specific features identified allowed students to demonstrate their capabilities more accurately. Continual feedback during the teaching and learning program allows students to make accurate decisions in summative assessment.

Students who attempted more than two option topics performed at a weaker level than students who focused on the requirements of the examination. Past papers can be useful for formative assessment and it is important that teachers use the subject outline to develop the teaching and learning program.

All dot points from the key questions and concepts and considerations for developing teaching and learning strategies are assessable in the examination. Teachers are advised to give each specific feature of the core and option topics selected the same prominence as reflected in the examination.

Teachers can gain valuable experience by attempting to write tasks and answers to assessment tasks sourced from external professional bodies. Moderated materials such as skills, tasks and projects are evidence at the end of the teaching and learning program. Teachers are advised to structure summative tasks where students can apply their knowledge against the performance standards. Attending clarification meetings, subject association and/or assessment and moderation panels, and/ networking with experienced teachers will enable new and existing teachers to understand the standard and develop appropriate assessment materials for students.

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