**Phil Feain** - Hello and welcome to this VCE Software Development School-assessed Task on-demand video for the School-assessed Task in 2022. The purpose of Video 2 is to support teachers with understanding Unit 3 Outcome 2, the SAT, Criteria 1-5, authentication and assessment for Software Development. My name is Phil Feain and I am the Curriculum Manager for Digital Technologies with the VCAA. This presentation will involve the following topics: Nature of the task, SAT Criteria 1-5, Authentication, Assessment and Issues identified after marking Unit 3 Outcome 2.

Now we'll will look at the nature of the task for you Unit 3 Outcome 2. Before we discuss the nature of the task we need to look at the outcome statement. The outcome statement for Unit 3 Outcome 2 says: Analyse and document a need or opportunity, justify the use of an appropriate development model, formulate a project plan, generate alternative design ideas and represent the preferred solution design for creating a software solution.

The nature of the task for Unit 3 Outcome 2 is stated in the study design and in the Administrative information for School-based Assessment. It involves: A project plan indicating tasks, times, milestones, dependencies and critical path and a justification of the selected development model as a written report and an analysis that defines the requirements, constraints and scope of a solution in a form of a software requirements specification and a folio of alternative design ideas and detailed design specifications of the preferred design.

The following slides reference the Administrative information for School-based Assessment for Software Development. We will unpack Criteria 1-5 by looking at the scope of the task, each criterion and an approach for completing the task. The first thing students need to do is to identify a need or opportunity for developing a software solution. In preparation for the SAT students will need to be able to identify a real-world need or opportunity that can be developed as a software solution for a client. Teachers should have discussions with their students regarding their need or opportunity and to have a process for approving the need or opportunity before students commence their project plan. Students are encouraged to document their ideas in order to convince their teacher that they'll be able to develop a software solution.

The evidence of this task is observed through Observation 1. An approach for identifying a need or opportunity could involve the following considerations: How do you want students to identify their need or opportunity? Some schools do this formerly. How should they document this? Are you convinced they can actually develop the software solution and meet the criteria? How will you support struggling students? How much time will students need to do this? Get them thinking early in Term 1. What programming languages will they use? Refer to the Programming requirements document on the study page.

The next thing students need to do is to prepare a project plan. Criterion 1 assesses the students' skills in managing a project. Students will prepare a Gantt chart using software that documents all the stages and the activities of the problem-solving methodology for Unit 3 Outcome 2 and Unit 4 Outcome 1. Students will need to document all the relevant tasks, sequencing, time allocations, milestones, dependencies and critical path.

The evidence from this task is observed through Observation 2 and assessed through Criterion 1. This is Criterion 1 which involves skills in project management. The indicators state the task that students need to complete to satisfy the criteria. These are assessed against the levels of performance. Each criterion is worth 10 marks. In this criterion students are to: Prepare a Gantt chart using software that documents all stages and activities of the problem-solving methodology for Unit 3 Outcome 2 and Unit 4 Outcome 1 and Document all the relevant tasks, sequencing, time allocations, milestones, dependencies and critical path.

An approach for preparing a project plan could involve the following from the Advice for teachers. Students will produce a project plan that outlines the tasks, sequencing, time allocation, dependencies, milestones and the critical path. They will follow the project plan to develop their software solution to their identified need or opportunity. The project plan takes into consideration all stages and activities of the problem-solving methodology, covered in Unit 3 Outcome 2 and Unit 4 Outcome 1. Once the project plan has been developed it will be monitored and modified throughout the entire project. Students do not have to use dedicated project management software in the development of their project plan.

The next thing students need to do is to select and justify the use of a development model. Criterion 2 assesses students' skills in the selection and justification of a development model. Students are to document and justify the use of their selected development model approach for developing their software solution. Diagrams representing each of the development models are in the Advice for teachers. The evidence from this task is observed through Observation 3 and assessed through Criterion 2. This is Criterion 2 which involves skills in the selection and justification of a development model. In this criterion students are to: Document the use of the selected development model approach and Document the justification of the selected development model approach.

Students need to select and justify the use of a development model that best suits the context of their need or opportunity. Will it be Waterfall, Spiral, Agile or will it be a hybrid such as Waterfall and Agile? The three development models are shown in the Advice for teachers as seen here. Waterfall on the left, Spiral in the middle and Agile on the right.

This slide compares each of the three development models. Waterfall - good for small projects, requirements are clearly stated at the beginning of the project and don't change, software produced late, linear process from start to finish, each stage is completed one at a time, clients only interact at beginning and end of the project. Spiral - combination of Waterfall and Agile, good for large projects, good for when requirements are not clear, better client feedback, software produced early, each stage starts small and builds up throughout the project in each spiral, design and then get client feedback, develop and then add functionality, etc. Agile - good for client satisfaction, an iterative process, software is not developed all at once, delivered in stages for client feedback, requires a lot of face-to-face communication, software produced early, tasks are performed quickly, changes to requirements and feedback from clients can be incorporated throughout the project. You can find a lot more information and examples of their use online.

The next thing students need to do is to collect data and use analytical tools. Students are required to document data for analysis using the appropriate data collection methods. The data collected will contribute to the use of analytical tools and techniques in Criterion 3 and the development of a software requirements specification in Criterion 4. The process of data collection may involve students communicating back and forth with their clients.

Students will document evidence of their critical and creative thinking through the identification, clarification and critical analysis of the data collected as part of the analysis stage in Criterion 3. Refer to the Skills underpinning the Analysis Stage in the Units 1-4 and the Problem-solving methodology specifications on page 13 of the study design. The evidence from this task is observed through Observation 4 and assessed as part of Criterion 3. This is Criterion 3 which involves skills in using analytical tools and techniques. In this criterion students are to: document data for analysis using appropriate data collection tools or methods, use all the appropriate features of the selected analytical tools, depict all the relationships between data, users and digital systems and document evidence of critical and creative thinking through the identification, clarification and critical analysis of the data collected. This last indicator involves critical and creative thinking and I'll talk more about this in a few slides.

Examples of the three analytical tools of context diagrams on the left, data flow diagrams in the middle and use case diagrams on the right are shown in the Advice for teachers as seen here. The last indicator in several criterion involves students documenting their evidence of critical and creative thinking as part of the criterion.

This is an example from Criterion 3. Notice in the indicator that students are documenting their thinking when identifying, clarifying and critically analysing the data they have collected. This links back to page 13 of the study design as part of the analysis stage and the problem-solving methodology and specifically, the Skills underpinning the Analysis Stage. Students will carry out these steps as appropriate when collecting data. Students can document this in a log, a portfolio or as a written report in order to show their thinking through completing this criterion and other criteria with critical and creative thinking indicators.

The next thing students needs to do is to develop a software requirements specification. Criterion 3 assesses students' skills in the use of analytical tools and techniques. Students will document the appropriate features of the selected analytical tools and depict the relationships between the data, users and digital systems. Sample representations of the analytical tools are in the Advice for teachers. Criterion 4 assesses students' skills in documenting a software requirements specification. Students will document the functional and non-functional requirements, constraints and scope, as well as the technical environment and the intended audience of the software solution. An outline of the content required in the software requirements specification is in the Advice for teachers.

Students will document evidence of their critical and creative thinking through the identification, clarification and critical analysis of the data collected as part of the analysis stage in Criterion 3 and 4. Refer to the Skills underpinning the Analysis Stage in the Units 1-4 and the Problem-solving methodology specifications on page 13 of the study design. The evidence from this task is observed through Observation 5 and assessed through Criterion 3 and 4. This is Criterion 4 which involves skills in documenting a software requirements specification. In this criterion students are to: document the functional and non-functional requirements, constraints and scope as part of the SRS, document the technical environment and the intended audience of the solution as part of the SRS and document evidence in critical and creative thinking through the use of questions and strategies to critically analyse solution requirements. An approach for developing the software requirements specification could involve the following from the Advice for teachers.

The SRS documentation should include the following content: the purpose and audience of the SRS, user characteristics (general characteristics of the proposed users for the software solution), environmental characteristics (technical description of the environment in which the software solution will operate), functional requirements and non-functional requirements, constraints, scope and in the appendices: have the context diagrams, data flow diagrams and use case diagrams.

The next thing students need to do is to design the software solution. Criterion 5 assesses the students' skills in designing the software solution. Students will generate two or three alternative design ideas, develop evaluation criteria with reference to their design ideas and the efficiency and effectiveness of the software solution and then produce their preferred designs for the software solution. An example of the process for developing detailed designs is in the Advice for teachers.

Students will document evidence of their critical creative thinking through design ideas, solution requirements and justification of preferred designs as part of the Design Stage in Criterion 5. Refer to the Skills underpinning the Solution design activity in the Units 1-4 and the Problem-solving methodology specifications on page 14 to this study design. The evidence for this task is observed through Observation 6 and assessed through Criterion 5. This is Criterion 5 which involves skills in designing a software solution. In this criterion students are to: Generate alternative design ideas, develop evaluation criteria with reference to design ideas and the efficiency and effectiveness of the software solution, produce the preferred design for the software solution and document the evidence of critical and creative thinking through design ideas, solution requirements and justification of preferred designs.

An approach for designing the software solution could involve the following from the Advice for teachers. Students could generate two or three design ideas, develop evaluation criteria for evaluating their alternative design ideas, get some feedback from their client and produce their preferred designs.

Just a quick look over authentication as this is covered in more detail in the Background to the SAT video and Authentication video. Teachers are to fill out these forms during the year. They are to: state the date of the observation and submission of each of the components of the SAT, comment on the observation and the submission of each of the components and sign their initials for each observation and submission. Students are also required to sign their initials for each observation and submission.

At the completion of the unit, students are to sign and date the declaration that all resource materials and assistance used have been acknowledged and that all unacknowledged work is their own. The Authentication record form should be updated for each observation and submission during the lifetime of the SAT. It should not be left to the end of the SAT. Authentication record forms can be requested as part of the audit process by the VCAA.

And finally, looking at the assessment of the SAT. This is the Assessment Sheet for scores to be added and submitted through VASS. All 10 criterion for the SAT are listed on this page with spaces provided for each of the scores. The first five scores will be filled in for the SAT in Unit 3 Outcome 2.

This last slide looks at issues identified after marking Unit 3 Outcome 2. At the completion of Unit 3 Outcome 2 students may experience issues that will have a negative effect on the development of their software solution in Unit 4 Outcome 1. Teachers can provide feedback on the quality of the designs, however, the adjustments must be initiated by the student and not directed by the teacher. While students can make changes to their designs they will not be reassessed and their original score will stand.

In this presentation we looked at: the Nature of the task, discussed SAT Criteria 1-5, looked at Authentication, looked at Assessment and discussed Issues identified after marking Unit 3 Outcome 2.

Thank you for following this presentation. If you have any questions regarding this presentation you can contact Phil Feain, the Digital Technologies Curriculum Manager at the contact details below. Thank you.

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