Hello and welcome to the VCE Software Development 2021 School Assessed Task on-demand video on the Unit 3 Outcome 2 SAT criteria 1–5 for 2021. The purpose of this video is to support teachers with understanding the SAT, the criteria, authentication and assessment for Software Development.

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This session will involve the following topics: planning, nature of task, SAT Criteria 1–5, authentication, assessment, and issues identified after marking Unit 3 Outcome 2. First, we will look at some planning for the SAT. When planning the SAT for 2021, it's worthwhile to consider some questions. I have included the following questions to get you started.

One, what do I need to teach the students in order to prepare them? How long will this take?

Two, how much time do students need to work on each criterion? Do they work on one criterion at a time or Criteria 1–5 together?

Three, how much time will I need to assess student work and when will I do it? Do I assess each criterion separately, then provide feedback to students for each one, or do them all together?

Four, when are students SAT results due to VASS?

Five, when I do the observations? How regularly? What evidence do I then write down?

Six, how do I deal with students that are weaker with their programming and organisation?

Seven, how do I know if students have identified an appropriate need or opportunity for the SAT?

And eight, how do I know if the students can complete it?

In terms of delivering and assessing the SAT, there are two strategies that teachers could follow. Strategy 1 is the milestone strategy. And Strategy 2 is the submit all strategy.

Strategy 1, students complete and submit one criterion at a time for assessment. Teachers then assess and provide feedback. Advantages, it's quick feedback for students and very effective for motivating students, particularly if they start off slow and better authentication. Disadvantages, you need to be responsive and disciplined as a teacher.

Strategy 2, students complete and submit Criteria 1–5 as one submission in Unit 3 and then teachers assess Criteria 1–5 and provide feedback. Same with Criteria 6–10. Advantages, less marking throughout the SAT. Disadvantages, some students will struggle due to less feedback. Possible issues with authentication. You're going to have to do more observations and more concentrated marking in a busier time of Term 2 and Term 3.

Now we'll look at the nature of the task for Unit 3 Outcome 2. Before we discuss the nature of the task, we need to look at the outcome statement. The outcome statement of 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 requirements, constraints and scope of a solution in the 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 for 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 will 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 formally. 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 students' skills in project management. 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, both parts of the SAT. 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 tasks 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. To document all the relevant tasks, sequencing, time allocations, milestones, dependencies and critical path. The 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'll 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 a 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.

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 the 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, et cetera. 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. But 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 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 the evidence of their critical and creative thinking through the identification, clarification, the critical analysis of the data collected as part of the Analysis Stage in Criterion 3. Refer to the Skills underpinned in the Analysis Stage in Units 1 to 4, 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 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, but I'll talk more about this in a few slides. Examples of the three analytical tools of context diagrams, data flow diagrams and use-case diagrams are shown in the *Advice for teachers* as seen here.

The last indicator in several criteria 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 with 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 in the Problem-solving methodology, but 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 need to do, is to develop a software requirement 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 analysis stage in Criterion 3 and 4. Refer to the Skills underpinning the Analysis Stage in the Units 1 to 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 requirement specification. For 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 of 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, such as general characteristics of the proposed users for the software solution environmental characteristics, such as the technical description of the environment in which the software solution will operate functional requirements and non-functional requirements constraints, scope and appendices including: 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 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 and 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
to 4 and the Problem-solving methodology specifications on page 14 of the study design. The evidence from 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 designs 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 to 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 will 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 last time 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 criteria of the SAT are listed on this page with spaces provided for each of the scores. The first five scores, Criteria 1–5, will be filled for the SAT in Unit 3 Outcome 2. A couple of marking issues that need to be discussed. Use the rubrics from the 2021 Administrative information for School-based Assessment, Software Development. Mark the rubrics holistically. Consider how you mark and the effect on statistical moderation of those marks. The awarding of a zero instead of an NA can affect statistical moderation of your class results. Late submission, this is a school-based decision with some flexibility. NA is to be awarded when a criterion or group of is not observed and not submitted. You can award a mark if observed and not submitted. A zero is to be awarded when the work is submitted but does not meet the descriptors. Students still need to be able to achieve an S.

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.

This is the end of the presentation.

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