**Katerina Poropat:** Good afternoon, everyone, and welcome to today's webinar - Introducing the Victorian Curriculum 7–10 Digital Technologies. My name is Katerina Poropat and I'm project manager in the Victorian Curriculum F–10 Unit here at the VCAA. It's my great pleasure to introduce you to the curriculum manager for Digital Technologies, Phil Feain, who'll be leading our presentation today. I would like to thank Alicia Farrell from the F–10 Unit who has done a lot of the work behind the scenes to make this webinar possible.

**Katerina Poropat:** So before we begin, we will start with an acknowledgement of country. I would like to acknowledge the traditional custodians of the many lands across Victoria on which each of you are living, learning and working from today. For myself and those of us in the Melbourne metropolitan area, we acknowledge the traditional custodians of the Kulin Nations. When acknowledging country, we recognise Aboriginal and Torres Strait Islander peoples' spiritual and cultural connection to country, and acknowledge their continued care of the lands and waterways over generations, while celebrating the continuation of a living culture that has a unique role in this region. I would like to pay my respects to elders past, present and emerging for they hold the memories, traditions, culture and hopes of all Aboriginal and Torres Strait Islander peoples across the nation, and hope they will walk with us on our journey.

**Katerina Poropat:** So before we get into the presentation, I'll briefly go over some housekeeping. So please note that the chat function is being used to share relevant information and links from the VCAA. You will notice that a Q&A box has been set up, so please use this to put your questions and comments in, as this will help us ensure all your queries are attended to and we do not miss any questions. When you use the Q&A box, please make sure you select all presenters, so that all panellists can see your questions as they come in. We will answer these in a few ways. Firstly, we may type a response directly into the Q&A box, which all participants will be able to view, or we will have two dedicated Q&A sessions, one in the middle and one at the end of the presentation, where Phil will address these queries. A number of questions were also received through the registration process, so please note that these will be addressed during the dedicated Q&A sessions in the presentation.

**Katerina Poropat:** The second part of our housekeeping is to let everyone know that this session is being recorded. A copy of both the recording and the PowerPoint, plus a transcript, will be loaded onto the VCAA F–10 Resources web pages under the Professional Learning section. So without further ado, Phil, I will throw over to you to our presentation today.

**Phil Feain:** Thanks very much, Kat.

**Katerina Poropat:** Hang on a second, just need to throw the ball. It's not quite.... There we go. Alright, over to you.

**Phil Feain:** OK, well, good afternoon, everyone, and welcome to Introducing the Victorian Curriculum 7–10 Digital Technologies webinar. The purpose this webinar is to help you with understanding the structure of the Digital Technologies curriculum and to assist you with curriculum planning for levels 7–10. As you know, my name is Phil Feain, and I'm the curriculum manager for Digital Technologies with the VCAA.

**Phil Feain:** So looking at an outline of this session, we're going to cover the following points - the aims of the curriculum, how it is structured, where to find both curriculum documentation and support resources, and how to assess against the achievement standards.

**Phil Feain:** So let's have a look at the aims of the Digital Technologies curriculum. So the aims are to ensure that students can design, create, manage and evaluate sustainable and innovative digital solutions to meet and redefine current and future needs. Use computational thinking and the key concepts of abstraction, data collection, representation and interpretation, specification, algorithms and development to create digital solutions. Apply systems thinking to monitor, analyse, predict and shape the interactions within and between information systems and the impact of these systems on individuals, societies, economies and environments. Confidently use digital systems to efficiently and effectively automate the transformation of data into information and to creatively communicate ideas in a range of settings. And apply protocols and legal practices that support safe, ethical and respectful communications and collaboration with known and unknown audiences.

**Phil Feain:** So at this stage, it's pretty important to differentiate between Digital Technologies - so upper-case DT, digital technologies - lower-case dt, and information communication technologies - ICT. And there is some confusion between these three terms. So Digital Technologies - upper-case DT - this is the curriculum. So provides students with the opportunity to acquire and apply specific ways of thinking about problem-solving to create innovative, purpose-designed digital solutions. It's a way of analysing problems and precisely and logically designing solutions that can be understood and carried out through the use of programming languages. Design and systems thinking also contribute to the problem-solving approach in this curriculum.

**Phil Feain:** Now, digital technologies - lower-case dt - this term is used in several different learning areas. This is where we refer to the digital resources such as tablets, notebooks, cameras, phones and data probes that allow data and information to be manipulated, stored and communicated. ICT, well, that should be embedded with all learning areas, and that involves developing students as confident users and consumers of digital systems. Now, some of the issues we have is that some schools see lower-case digital technologies referenced in some learning areas and they think that they're going to integrate Digital Technologies curriculum where they see that - that's where they're doing it, and that's OK. That is not the case. And ICT, particularly at Level 7–10, we often see that's not being done well in schools and sometimes not even being done in schools. So really important to understand the difference between those three terms in terms of curriculum needs for Digital Technologies curriculum and also for ICT within all learning areas.

**Phil Feain:** OK, so to assist teachers with the difference between the Digital Technologies curriculum and ICT, we've developed this poster, available on our website at the link at the bottom of the slide there. So it shows examples of the Digital Technologies curriculum on the left, and ICT on the right. And it shows them against one another. And we also reference it blue on one side, green on the other. This was done to help teachers to visualise the content of a range of content descriptions across the strands through infographics. And these are A3-sized posters and we'd like to see them up in schools and classrooms and offices around Victoria. And you can easily download that as an A3 document from our website.

**Phil Feain:** In the aims earlier, we touched on the ways of thinking and we'll look at these further in detail over the next two slides. So this is really important part of the Digital Technologies curriculum and why the learning area is important to students. So the Digital Technologies curriculum develops students' thinking in the areas of computational thinking, design thinking and systems thinking. So this also links to problem solving. We want our students to be able to solve problems. So this involves analysing a problem or a need, designing a solution to a problem or a need, developing the solution, and evaluating the solution to see if it meets requirements. And if you're a teacher in VCE, particularly Units 3 and 4, this is fairly familiar to you.

**Phil Feain:** Looking at each of the ways of thinking in a little bit more detail, computational thinking involves decomposition - so breaking the problem down into parts, organising data logically and developing algorithms. Design thinking involves generating creative and innovative ideas, mock-ups, prototypes, etc, and analysing and evaluating ideas against criteria. And systems thinking involves analysing the interactions and interrelationships between components, devices and people.

**Phil Feain:** So we'll look now at the structure and components of the Digital Technologies Curriculum for Levels 7–10. So this is the Digital Technologies Curriculum web page. You can find it at the link at the top of the slide there. And on the left, it goes through a range of pages for you to breakdown the curriculum and get a better background to it. So we have the Rationale and Aims, Structure of the curriculum, Learning in Digital Technologies, Scope and Sequence for F–10 links to resources, and the glossary. The curriculum link lets you link to each of the levels or bands in the curriculum, content descriptions, elaborations and achievement standards.

**Phil Feain:** So on this slide here we have this page, which is actually on our Curriculum web page - the Scope and Sequence document for F–10. So this is actually our Digital Technologies curriculum on one page. And it's on one A3 page for you. So you can see you have the content descriptions, each of the bands, the strands and the achievement standards at the bottom. Hopefully you've seen this all before.

**Phil Feain:** OK, at this stage, it's important to understand the terminology in the curriculum. So firstly, we have the bands. So in some learning areas, each band is a single year level. So in Digital Technologies, each band is two years. For example, Levels 7 and 8, 9 and 10. The only difference is Foundation–2, which is three years. Otherwise, all our bands are two years. So this is the content we want students to know by the end of the second year.

**Phil Feain:** So next we have the strands. And these are the different areas in our curriculum. We then have our content descriptions, and this is what we want students to learn for Levels 7 and 8, and 9 and 10. And then we have the elaborations, which are the codes, come under the codes there in brackets at the end of those content descriptions. So these are a range of activities that could be completed as part of the teaching of the content descriptions.

**Phil Feain:** So here's an example of a content description from Levels 7 and 8 in the Creating Digital Solutions strand. So this is what students need to learn. So they need to be able to design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input, and to identify errors.

**Phil Feain:** So this is an example of the elaborations for this particular content description, when you leap through that page we showed you earlier. Each content description has a number of elaborations, and you can see this one has four. The purpose of the elaborations is to provide you with some examples of activities to assist you with your planning for delivering this content description. So notice the range of activities here. Investigating and designing some common algorithms, checking the accuracy of an algorithm, using diagrams to describe key decisions and using structured English to express algorithmic instructions. It's also important to note that you don't have to teach or use all of these activities in the elaborations. Sometimes we get teachers that get a bit concerned they have to address all of them. No, you don't.

**Phil Feain:** Alright, so here we have the strands, and we have three strands for our curriculum, the three different areas. So firstly, we have Digital Systems. So this strand focuses on hardware, software networks, data and security. Data and Information - so this strand focuses on data collection, representation and management. Creating Digital Solutions - so this strand focuses on students solving problems involving the stages of analysing, designing, developing and evaluating.

**Phil Feain:** So the content descriptions enable students to progress from F–10 on a continuum, building upon their knowledge and learning within each strand as they go from band to band through the year levels.

**Phil Feain:** So what we have here are the content descriptions for the Digital Systems strand, and these are at the top of the Scope and Sequence document. Notice there are only five content descriptions in the whole strand going from Foundation–Level 2, all the way up to Levels 9 and 10.

**Phil Feain:** So these are the content descriptions for Data and Information, just below the Digital Systems strand, and you've got 17 content descriptions in this strand, progressing from three in Foundation–Level 2, all the way up to four in Levels 9 and 10.

**Phil Feain:** And these are the content descriptions for the Creating Digital Solutions strand. These are in the middle of the Scope and Sequence document and we have 20 content descriptions here in this strand, progressing from two in Foundation–Level 2, through to five in Levels 9 and 10.

**Phil Feain:** At the bottom of the Scope and Sequence document, we have the achievement standards for the content descriptions at the top. So the achievement standards are what you're referring to when you're assessing evidence of student achievement in the content descriptions which are what you're teaching your students.

**Phil Feain:** So, look, this is just a bit of a colourful diagram to sort of break down the link between the content descriptions and the achievement standards. So what I've got here is an example for Levels 9 and 10. So sometimes you'll notice that one content description will relate directly to one statement in the achievement standards, and in some cases, two or three content descriptions will relate to one statement in the achievement standards.

**Phil Feain:** So what I've done here is just expanded out the view of the achievement standards for Levels 7 and 8, and 9 and 10. And I've actually broken up the statements into paragraphs in each band just to better represent each strand for you. So the first paragraph in both of these areas includes the achievement standards for the Digital Systems strand, the second paragraph includes the achievement standards for the Data and Information strand, and the third paragraph includes the achievement standards for the Creating Digital Solutions strand.

**Phil Feain:** So next two slides will look a little bit at how to assess against the achievement standards. That's one question teachers that are new to the curriculum have some concerns with. So we'll look at an example here from Levels 7-8. So the achievement standard says, "By the end of Level 8, students distinguish between different types of networks and their suitability in meeting defined purposes." So the content description says, "Investigate how data is transmitted and secured in wired, wireless and mobile networks."

**Phil Feain:** So looking at our resources for Digital Technologies - so we have some resources on our web page - we'll look at an idea for assessment. So one of our ideas we have in one of our activities is, "Students draw a diagram of their home or school network using symbols to show the network components, such as servers, routers, printers, devices, transmission media, and show transmission rates. This can be hand drawn or completed using drawing software." So this is just one example of how to assess against the achievement standards. So there are other ways of assessing it as well.

**Phil Feain:** So on this slide, we have some ideas for delivering the unit. So this is what you could teach students leading towards that activity that you would use for assessment. So identify and describe different types of network components for both wired and wireless networks. Network components should include servers, routers, switches, devices such as desktop computers, laptops or tablet devices and printers. As part of the description, discuss what each component is used for and how it works. Draw simple diagrams of each of the components using symbols. Identify and describe a range of transmission media for wired, wireless and mobile networks. Include the transmission rates for each of the transmission media, and provide examples of where each of the transmission media would be used.

**Phil Feain:** So, look, we've just reached that midpoint. At this stage, I might ask if there are any questions to be put into the Q&A. We have a couple of questions in here already, and I'll just go through these now.

**Phil Feain:** So first question we have is, "Why is Design Thinking repeated between Digital and Design Tech curriculums? Well, look, I can't speak necessarily for Design Tech, but Design Thinking is slightly different within different learning areas and what we do with it, so that's why it's repeated within each of the discrete curriculum. So that Design Thinking, particularly in Digital Technologies, looks like something that's a bit different to the other learning areas.

**Phil Feain:** "Should Design Thinking be a general capability if it is across multiple subject areas?" Well, it's not really in all learning areas, so you couldn't have it as a general capability to be done across all of them. Because we are solving problems in our curriculum, Design Thinking is really, really critical. Particularly any of you that have been teaching programming for a large number of years, you'll appreciate the amount of time spent on analysis of, you know, students determining requirements before they spend time on Design Thinking, developing mock-ups and trying to determine some algorithms. It takes a little bit of time. And so really important that that is taught a certain way discretely within our curriculum, as opposed to what's in ICT.

**Phil Feain:** Last question here. "When drawing a network diagram, is it possible to use freely available industry standard simulators?" Yeah, look, I don't know too much about the simulators, but there's some great software like Microsoft Visio that's part of Office with a lot of schools, Enterprise Agreement with Microsoft, in which you can just click and drag icons onto the page. You can also link them up and it will do a key for you on the page - really easy. Students can also hand draw if you don't have access to that software. There's probably some free ones online you can look at as well.

**Phil Feain:** OK. So we don't have any more questions. What we might do is continue on and then I'll go through some more at the end.

**Phil Feain:** Alright, so programming sits within the Creating Digital Solutions strand. And we'll have a look at programming over the next couple of slides. So we'll just give a brief overview. So here's an example of using a general-purpose programming language at Levels 7 and 8. So general purpose programming languages are also known as text-based programming languages, and that's the type of programming to be covered in Levels 7 and 8. So this case, this example is using Python. So this example shows students using branching with, IF...ELSE statements, iteration with WHILE statements and using functions.

**Phil Feain:** So this example here is using an object-oriented programming language at Levels 9 and 10, and in this case we're using Visual Basic. So students would be developing modular programs by applying selected algorithms and data structures.

**Phil Feain:** Right, so now we've had a bit of a look at an overview of the structure of the curriculum, it's probably a good time to think about curriculum planning, using the resources that we've developed at the VCAA.

**Phil Feain:** Alright, first resource is really about understanding the terminology and using the correct terminology within the Digital Technologies curriculum. So we actually have a six-page glossary and that sits on our curriculum web page. So it defines a list of terminology that is relevant to the learning area, and teachers are encouraged to become familiar with this terminology. Teachers who teach VCE Applied Computing should also be familiar with these terms as well.

**Phil Feain:** We also have two curriculum planning documents on our web page to assist you. So the first one here is screenshot on the right, is what we call our curriculum or program planning templates. So these planning templates give examples of how to cover the content descriptions over the two-year planning cycle in Levels 7 and 8, or Levels 9 and 10. This is an example for Levels 7 and 8. Each of these link to the achievement standards, sample units and assessment tasks. So we have three samples for each band here to help you with your planning. So if you look at this document, it maps out some units that you would cover within a semester or a year level. And the particular content descriptions there are referenced going across that document, the achievement standards for the levels before, in the middle, which you're at, so, 7, 8, 9 and 10 are there, so you can reference where you're coming from and where you're going to. And then you can determine your assessments down the bottom and link them to your achievement standards. So we have three of those for each band in our curriculum.

**Phil Feain:** So the next planning document is the curriculum area plan, and these are linked to the previous curriculum or program planning template. So this is an example for Levels 7 and 8, and actually an example that follows on from the previous resource we had on the previous slide. So the purpose of these is to provide a visual representation as to when the strands and the curriculum could be covered across the years in the band. So they also provide an idea of some time allocation. So we have three samples for each band. Now, keep in mind, that schools have different timetables and these need to be taken into consideration.

**Phil Feain:** So there's no one plan that we could have that would fit every school. You'd have to look at your school's context for timetabling. But chatting to teachers, one of the consistent things we found around Levels 7-8 was maybe one or two periods in a time allocation and roughly 45-60 minutes. So we came up with three different samples of how that could look, and then you could look at these and maybe get an idea of your own context and then customise to your own school's setting.

**Phil Feain:** Right, so once you've got an overall plan on where Digital Technologies fits into your curriculum, it's a good time to consider what you want to do in each of your lessons. So keep in mind that your lessons are around meeting the content descriptions for teaching and assessing against the achievement standards.

**Phil Feain:** So one of the resources we have to help you with this is what we call the Unpacking Content Descriptions resources. So this one here on the screen is an example of Digital Systems in Levels 9 and 10. So these were designed to provide a quick reference for teachers to understand how to link some lesson ideas and some sample activities to a range of content descriptions from F–10. So we'd covered half of our content descriptions in our Digital Technologies curriculum. And so we don't have them all in every single band, but you should be able to see some continuity between the different bands as you're putting them together.

**Phil Feain:** These next two resources we developed last year. These were developed when we went into remote learning in Term Two. So the purpose of these was to create two sets of activities for teachers, what we call plugged activities and unplugged activities, So plugged activities are students using software or devices, and unplugged is activities, but not using software or devices with them, so it might be just drawing something or doing a list or coming up with ideas, etc. Each of these resources covers the majority of the content descriptions across F–10, with two plugged activities and two unplugged activities for each content description going through the bands. Teachers could have students working on these at school or at home. So these were developed to support teachers with activities for students to work on during remote learning that met the Digital Technologies curriculum, and they're still applicable now with students back at school.

**Phil Feain:** So this is just an example of an unplugged activity for the Digital System strand in Levels 7 and 8. Notice the practical nature of the activities that students could complete at school or at home. So these activities meet the content descriptions directly and teachers can modify these activities or adapt as assessment tasks. So looking at these two activities here. First one, students could draw a diagram of their home or school network and students could describe the purpose of a range of network components and draw a diagram with all of those components within it.

**Phil Feain:** This is an example of a plugged activity for the Creating Digital Solutions strand for Levels 9 and 10. Again, notice the practical nature of the activities and the variety of software tools students could use to complete at school or at home. And looking at the activities could involve interviewing the teacher to clarify needs and requirements for a software solution, so as part of the analysis, and it could involve listing and describing the functional and non-functional requirements after they've done that interview. And they could use Word or Pages or Google Docs, etc, to do that.

**Phil Feain:** This next resource is a task that we developed around some unit plan ideas for Levels 9 and 10. We did these for all our bands, but it was really about having a look at how to create some ideas for lessons, some ideas around assessment. So just linking everything together. So we have ideas for classes and for assessment and a timeline for these. These also link to the curriculum area plans that we showed earlier.

**Phil Feain:** So this helps you to see that the content descriptions for this strand could be taught and assessed as one unit within the curriculum. And for teachers, particularly of Units 1 and 2, or 3 and 4, the Creating Digital Solutions strand really lends itself to one major task for students developing a software solution where they do analysis, design, development and evaluation.

**Phil Feain:** So if you have a look through this particular activity or unit plan for Levels 9 and 10, you'll see we have ideas for delivering the unit over nine weeks and actually dot points of what could be done in those classes. We also have ideas for assessing each of the components over the nine weeks as well, and different types of assessment or different types of assessment that could fit into the blocks. So how would you do analysis? How would you do design of a user interface? How would you do design of an algorithm, and how would you develop a solution and how would you evaluate it? OK, so, over to you, Kat.

**Katerina Poropat:** Thanks, Phil. So we have had a couple of questions also come through the Q&A chat box. So the question came in, "Do we have to cover all parts of the strands?"

**Phil Feain:** "Do you have to cover all parts of the strands?" So if you're talking about the content descriptions in the strands, yes. So by the end of that band, so by the end of Year 8, in Victoria, all students in department and Catholic schools should have...be able to, well, you should be able to assess evidence of learning of all of those contact descriptions through the achievement standards.

**Katerina Poropat:** Yep. The next question that's come through was in reference to the elaborations, as they can be quite helpful to use. "Do I need to cover all the sub points for each three strands in Year 7 and 8, for example?"

**Phil Feain:** Yeah, so the elaborations are activities that you could choose to do within the content descriptions. You do not have to do all of the elaborations. You don't have to do any of them. You could come up with your own activities. The whole idea of the elaborations is to give you some guidance as to what possible activities could look like. But, no. Unfortunately, we get some real issues where some teachers say, "But there's eight elaborations. Do I have to do them all? I don't have time. It makes things busy." No, you don't.

**Katerina Poropat:** Excellent. And the other one in the Q&A box was just in reference to that Visio conversation that was there earlier. So if anyone else has any other questions, please feel free to pop them into the Q&A box now. And up on the screen, we do have our contact details. So the generic inbox for the F–10 Unit is up on the screen there, as well as Phil's contact phone and email address. So if anything comes up at a later stage, please feel free to get in contact with us. There's also a link there, so you will receive the PowerPoint slides and the recording at a later stage, so you will have access to these links. But this is just for any advice about the implementation of the F–10 curriculum in Victorian schools. And you can subscribe to that through that Vision6 link there. And, Phil, you did mention you had a couple of questions that came through during the registration process. So if you'd like to address those now, go for it.

**Phil Feain:** Yeah, thanks, Kat. I had a couple of questions, but there's just one. Someone gave some advice on some other software packages to use here. So someone asked about an alternative to Visio. So a teacher suggested, yep, Draw.io is a good alternative. That's free. They also mention they use Cisco Packet Tracer. So they're good suggestions, thank you.

**Phil Feain:** And then the questions that I got during the week. So one here, "I'm a graduate teacher and will start a brand-new Digital Technology unit for Year 10 next semester. Could you please give me advice on how to start a new subject at a school and what resources are available?" Well, we've actually covered that in this presentation. So we've developed those curriculum planning documents to help you sit down and plan with the curriculum and actually work out when you're going to deliver it. So for some schools, particularly 7–10, it comes down to what time frame you're given. Is it one semester in two years? Is it two semesters over two years - one semester in one, one in the other? Is it a whole year, in one year, or is it over two years? Depending on your school timetable allocation, you'll be told what you can do. And then you start to work out how you can actually deliver the content descriptions for each of those strands in that time frame you have. So we've got those planning documents to help you with that. And we also have those other resources around activities for the classroom to get you thinking about how to deliver those content descriptions so you can use those within your teaching and learning program for your students and then you can develop some ideas around assessment from the other activities we have there as well.

**Phil Feain:** And the last question, Kat, was recommendations for programming languages appropriate for learning algorithms and coding for inexperienced teachers and students. Well, look, probably the two biggest programming languages we're seeing being used, which are the same for VCE, and they are for 7 and 8, and 9 and 10, as well - Python and VisualBasic.NET. They can both be used as a general-purpose programming languages and object-oriented programming languages.

**Phil Feain:** But you need to keep in mind in Levels 7 and 8 you are doing or using a general-purpose programming language, and at 9 and 10 you are using object-oriented programming language. So you've got to get your styles of programming right. In terms of the best way to learn algorithms and coding, there's some great tutorials online. And there are quite a few websites that have a lot of information about sitting down and actually learning the background to things as well. And it's probably good if you sit down and go through those tutorials and work through them and learn about those processes, because one of the things that gets to be a concern is if you're going to have students coding and you haven't gone through the actual activities you're gonna give your students. Particularly, some students can cover it really quickly and get it right and they'll develop it really well and quickly every time. Some students really do struggle with programming - the level of computational thinking and design thinking involved is quite high. And so, as a teacher, it's really good if you can sit down and learn how to break things down.

**Phil Feain:** I guess, from my experience when I used to teach programming at Year 10 in my last school, one of the things I used to do was say to the students at the start of semester, "The aim for this study is for me to give you a written document telling you what I want you to produce as a software solution." So it might be some detailed requirements, but as a couple of paragraphs of text, it's for them to be able to read that, interpret that and develop that solution. But to get them there, you've got to spend a bit of time with them understanding how to analyse a problem. So developing actual requirements, functional requirements. "What will this software solution do?" Non-functional requirements around its attributes. "How's it going to look? How's it going to work?" Those sorts of things.

**Phil Feain:** And then the design stages. I would always look at developing the user interface, so drawing mock-ups. Because as they start to visualise the problem and how it's going to look, they can link that to the requirements and see, "Oh, I need them to enter in..." You know, say it's a little invoice program or calculating pay. "I need to put in the number of hours worked, the hourly rate. So that means I need a gross pay. I might have to subtract tax. I need a net pay." They can start to visualise that. I would then use something like an IPO chart - information...sorry, input processing output chart to get them to understand what they're going to enter, what the calculations would be in the processing, and then what they would be displayed as output to the user. And then get them to start to break down some simple algorithms.

**Phil Feain:** So just some simple statements sequentially of what it's doing. And then introduce them to some selection through IF and ELSE statements, CASE statements, add some repetition with REPEAT, or WHILE statements, etc. And it's just a nice little sequence here. And what you find is some of the students that struggle with it initially, once they can start to visualise it, they'll have a chance and be able to do some algorithms and actually do some programming. It's really important to work out too when you're assessing those components are all part of the one task, rather just students are just purely coding because some of them find that a bit overwhelming. But when you sit down and do that and learn to do that yourself, you really get a good understanding of then how your students may think. And that's probably the biggest challenge. So that would be the advice I'd give. Hopefully that's sort of given you a bit of an insight as to how to tackle that area, Kat.

**Katerina Poropat:** Thanks, Phil. That was very comprehensive. So we haven't had any other questions come through the Q&A box as yet, so we will stick around for a couple of minutes now. Otherwise, that does bring us to the end of our presentation. So thanks again to Phil for that wonderful session, and everyone for attending.

[Copyright Victorian Curriculum and Assessment Authority](https://www.vcaa.vic.edu.au/Footer/Pages/Copyright.aspx) 2021