Hello, I'm Trang Pham, a teacher of Specialist Mathematics. In this set of videos, I will show you how an application task and corresponding assessment scheme can be developed. The purpose of the application task is for students to conduct a mathematical investigation with respect to questions of interest for a given context.

For specialist maths, this will be an investigation of a practical or theoretical context involving content from two or more areas of study, and will consist of four to six hours duration over a period of one to two weeks.

As you know, the application task has three components of increasing complexity. Now, how do you develop an application task that meets VCAA requirements and at the same time, assess your students at all levels? In other words, how can students be given an opportunity to demonstrate their highest level of performance, a task that is the talk of the town? That's a great approach that motivates and inspires your students. I do want to write an application task that has enough breadth and depth to challenge my students.

Back to the question. How do we go about developing an application task? Firstly, ask yourself, what is your spark? Mine has always been calculus. That's right, calculus. The famous mediaeval English philosopher Roger Bacon once said that, "Mathematics is a gate and key to science." I'm going to tweak his quote slightly to reflect my love of calculus. Calculus is the gate and key to life. It possesses not only truth but beauty. So, how can I share that beauty with my students? Well, I'm going to get them to explore calculus. Maybe something to do with reduction formulas.

Then, I remember I came across some reading from VCAA Bulletins to which I have included in this PowerPoint. Maybe it will inspire you to get started with some prompts. So you can see there are three supplements published back in 2002, 2003, 2004. And the last one on the slide that you can see is the SAC resource that's actually coming from the… I think it was 1989 to 1999. I've included an extract about a recursion from the VCAA Bulletin Supplement 2, and this is back in 2002.

So here it is. And here is an extract from the Bulletin. An important mathematical activity is a transformation of mathematical objects from one form or representation to an equivalent or related form for representation. For example, substitution and other techniques may be applied to transform a complicated integral into a simpler one of a recognisable standard form. Bingo, exactly what I have in mind.

I did some research and came up with a title, "Reduction Formulas for Integration," and I wrote an introduction to explain what this task is about. I want students to find out through their exploration on the task that in calculus, a reduction formula for integration can be used to successively reduce the complexity of an integral involving a natural number parameter. In my next video, I will discuss how I have developed component one of the application task.

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