Welcome back to this video series of constructing an application task for Further Mathematics Unit 3. This one will concentrate on the third of the components in the task. We've already developed the first two. We had the context, we got to see how the context was developing. We moved from a univariate discussion in Component 1 to a bivariate discussion in Component 2.

So Component 3 should now look at something a little bit different. It can certainly be related to the first two parts. It might digress into some other area. But this is where you can let the imagination run wild sometimes just to get this component up. So we're going through that same checklist: the data sources, what questions do we want to cover? Where's the content linked to those questions? What sort of analysis are we going to look at? And then of course, what the actual written part of Component 3 would look like.

So the data sources as we have used in the previous components are exactly the same. The good part about this, you've only got two data sources to consider. So the questions that I wanted to know here was, in terms of the wheat production of Australia, how did it compare globally? So this is going to bring in that international aspect. So the first few parts have just been nationally. This one is now going to move to an international comparison. Again, what trends are actually evident in other countries? Are they different or the same as Australian? So we can again look at the smoothing idea in terms of the time periods, whether we look at 10, 20, 30 years, what can we look at based on trends? Can we forecast, what limitations are part of this forecasting? Can we go and look at what crops might be like based on the time period that we're currently looking at?

So there's some really good questions here to explore as a Component 3. And as I said, it's really delving into that international area more than anything else. The areas of content relevant to this are very much the same as Component 2. We're still sitting in the bivariate sector, time series is certainly involved, regressions are involved, the idea of forecasting, interpolating, extrapolating, et cetera. That's certainly involved in this component which is a little bit of a shift from Component 2. The analysis that's actually required for this component, of course, is going to involve all of those areas that we actually talked about before, the notion of smoothing, what it actually looks like, how we can then undertake that sort of an analysis as we go.

So just delving into that in a bit more detail, we've got the visual displays, time series. We've got the smoothing again. They are going to be trying to come up with some smoothing methods themselves. What models are appropriate? Again are they linear, non-linear? What's it look like across countries. They might even choose a couple of countries to go and investigate in this particular video. The efficiency of being able to get that information across to you. What sort of a comparison does it look like? Can they actually go and compare it effectively? How can they then go and display this or write it up? Is it best in visuals or statistics? Can they give you a short report that actually shows you what's going on with this information?

So they were the areas that I was certainly going to explore as part of the analysis and what they were able to then come up with as part of this particular video. There is a fair bit in there. And again, you might start to think, well, this is actually quite long for four to six hours. If they were doing this well, then yes, it will actually fill four to six hours quite nicely. The detail of course will depend on the capacity of the child and where they're currently sitting with Further Mathematics work. Some of these students will cover this superficially. Others will be able to get right into the data and cover it in a great amount of detail. But of course that becomes part of the assessment component that we're looking at at the end. But certainly the three components that we've currently set up do give them great scope to go and explore their statistical work and knowledge that they've gained over this particular period of time.

So Component 3 and what it looks like, this says two other countries. As I said you might decide to ask them to choose three. They may come up with a number of countries themselves. The analysis that you're going to undertake, as I said, will be similar to previous. But because they're now looking at other countries, they've got a vast array. There might be some investigation going on from them initially. Which sort of a country do I want to look at? European, Asian, African, et cetera. So really they've got a smorgasbord of countries to choose from. They might actually want to see what this looks like in areas that aren't as well resourced as Australian, industries that we've actually got. So that's something to be aware of as well. But of course it opens up that scope for the students as they go through.

And then part of it is also that idea of predicting. But of course they, and you would expect them to come up with the limitations of any predictions or forecasting that they would then undertake and what evidence or support could be given to those sorts of things. But of course, if the trends are there, then it seems to be quite okay in this case just to get them to explore, as I said, but just to certainly get those limitations in there as well. So that's a good development of a context and where it's actually going.

Of course then mapping it back to the content areas. Again, I've begun, I've chosen two of the areas, again investigating and modelling time series data. I might actually find that a couple of these are repeated or I'd already listed them in Component 2. These two, I actually hadn't. But in your extensive list, as I said, you may have noted the listing of these. So they've already been covered.

So Component 3, as I said, can extend what was already done in the first two components, but it may go off on a completely different path. And of course that would be up to you to decide just where you wanted that pathway to lead based on the setting up of components three. I'm sure you'll see or understand from this task, there are many different avenues and pathways that can be taken by you in writing an individual task and making it unique to this one that I've got right here. There is certainly great scope for that to occur.

So once Component 3 has sort of been developed, and you'll notice the questions that I've posed, it's not a long task, in terms of writing this. Each of those three components might take up about a page and a half to actually get written. And therefore it doesn't take all that long to develop it. If I'm going to scaffold it, then it does take a little bit more time. And of course, that will, again, depend on the community that you have in your particular areas and what they're capable or what the students are capable of doing as you go through.

So that's the task itself, the development of it, the construction of the questions, the linking back to content, which then leaves us with basically the assessment to work our way through and what it might actually look like.

So the next of the videos that we will be looking at is specifically linked to assessment, and I will see you there shortly.

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