**Maria James** - So hi, everyone. Sorry about the glitches to start with, but welcome to this afternoon's webinar. So, it is specifically units one and two, and I know I had some questions about three and four, so I will get back to people about those individually. But as I said, tonight's focus is on units one and two and it's about knowledge, skills, and assessment. So, our event today is being held in the traditional lands of the Wurundjeri people of the Kulin nation, and I wish to acknowledge them as the traditional owners. I'd also like to pay my respect to their elders past and present and the elders of other communities who may be here today.

The purpose of tonight's webinar is to respond to your submitted webinar questions about units one and two, and in particular the questions relate to what the major study design changes are and to provide some assessment examples. I'm very happy to respond to other questions that arise during the webinar. Just a reminder that we have staged implementation, so units one and two to begin next year, and then units three and four the following year. I had a lot of questions in the submitted questions about what has changed in the study design, what's new, what's been deleted, and what's been shifted.

So, I thought I'd start with the key science skills, and I've got in, highlighted in red, the general key, the general changes to the key skills that you can see there. They're very relatively minor, but I do encourage you to go back to the actual study design that is the source of information and you can understand that I haven't been able to capture all the changes here, but I have got the major changes for the key design skills and just going through them, looking at formulating hypotheses to focus investigations and predicting possible outcomes of investigations, determining appropriate investigation methodologies, so we've now introduced a set of methodologies to physics.

There are eight of them that you need to be familiar with. And that students should have experience of, over units one and two. We've referred to safety data sheets and that's only if you're going to be using chemicals or hazardous materials and particularly demonstrating ethical conduct is important in experiments. Organising and presenting data in useful meaningful ways, and then we've specified how significant figures are going to be treated and we have that at the front of the study design and reference to constructing linearized graphs, and then inclusion, the terms repeatability, reproducibility, and resolution.

So, distinguishing between opinion and evidence and between scientific and non-scientific ideas, and that will be particularly important in your assessment tasks. So going back to thinking about how you teach that, as you are progressing through your key knowledge and key skills and then also thinking about how you might assess that. And then our final section on analysing and evaluating physics related societal issues, and that is taking into account social, economic, legal and political factors, and that will be especially important for unit two, study two options.

One of the submitted questions was, are we not expecting independent variables versus dependent variables anymore, and can it be more a more general exploration? And the answer to that is yes. We are looking at being more broader than just looking at controlled experiments and you'll see that the term, controlled experiments, doesn't appear anymore in the key skills. So, we are looking at a greater range of methodologies which do, in fact, reflect contemporary scientific exploration. So, we are expecting that this will come up through your teaching and also through your assessment. One of the new terms is resolution and I think that diagram, I think is really helpful in explaining it, that it relates to the instrumentation that you use.

So, we talk about the bottom syringe there having more graduations and therefore it has a high resolution than the syringe that's at the top. So that is a definition that we are looking at in terms of resolution and that has often been confused with the precision of instruments. We talk about the resolution of an instrument, and we talk about precision of measurements which relates to how closely a set of measurements are. So, we can only talk about precision of measurements if we have multiple measurements there. There was another question about uncertainty, and we've specified now that we are looking at it only from a qualitative perspective. So, the question that was submitted was, if determining uncertainty for a set of measurements, is beyond the scope of VCAA physics, how would you recommend students are going to look at uncertainty of repeated measurements of say dependent variable?

So, if you've got repeated measurements, we're not expecting students to calculate uncertainty at all. We would expect them to be calculating an average or a mean, but in terms of uncertainty, we're only looking at them not calculating, but understanding that there is uncertainty associated with measurement, looking at causes of uncertainty and understanding the terminology. So, if students are presented with something like 25 plus or minus two metres per second squared, we'd expect them to know what that means in terms of a range. So, it would be between 23 and 27 metres per second squared, and we'd only expect them to be, we'd also be able to expect them to be able to plot that onto a graph but not actually determine what that level of uncertainty is themselves. With the unit one area of study one changes, this probably has the most changes in the whole study design. So, it's important that you do have a look at this very closely.

What we've got is a name and focus change from the current, how can thermal effects be explained to how light, and heat explains? So, there's a shift in terms of content. So, the new inclusion, rather than, I couldn't list them all, so I've just got listed there, the number of the dot points that you can have a look at, so you can refer to this PowerPoint later on to look at the changes.

So, I've identified the new inclusions and where they've come from in terms of the current, or I'm calling it the old study design. Then we have an edited section on thermal energy, and we have an edited section on the interaction of thermal energy and electromagnetic radiation. So, with our unit one aero study one deletions and shifts, a lot of the content of the current unit one area of study one has been shifted to option 2.1 and then we've had quite a few deletions.

So, I've identified the deletions so that you can align your current resources to whether you know where they're going to fit in terms of the new study design. So, you can refer back to that when you're doing your planning sessions. In terms of unit one area of study two changes, you can see that the new content is highlighted in red. So, we are looking at a qualitative explanation of nuclear energy. We've got new content in terms of the properties of alpha, beta and gamma radiation. We've got some content from the old option 2.7. This is for the radiation from the nucleus, nuclear energy. Again, we've got a little bit of old content from option 2.6 and then new is to investigate the viability of nuclear energy as an energy source for Australia.

So, note that some of the content from the old unit one area of study three now has been put into the unit two options. Unit one area of study three changes: There aren't a lot of changes here. It's really only the terminology. So, we're looking at referring to, we've deleted the reference to effective resistance and just focused on equivalent resistance, and then we've got a new dot point about analysing circuits comprising voltage dividers, and you'll see that another new point is that we're looking at energy transfers and transformations, not with reference to transducers, which we currently do, but to these other components. So, resistors, light bulbs, LEDs, et cetera. With the unit two area of study one changes, again, these are largely changes to the formula that we're using and to be in line with our notation for force where we look at the force on something by something else.

So, you've got the changes there and you can see with the energy in motion section that we are looking again at trying to adopt some of the physics conventions when we're looking at changing Hooke's formula law to look at if equals negative-KX, where X is the extension. Change of impulse formula, you can see there, that we've looked at it in terms of looking at change. A new subheading with equilibrium includes the existing two key knowledge points that relate to talks, and we do have a new key knowledge point, investigate the application of motion concepts through a case study. And I think this might also lend itself to assessment, so you might want to use this new key knowledge point to tie up all the concepts in this particular area study and also to use it as a context for assessment. The unit two area of study three changes, again, it's just with, I'm introducing these new terms that we changed in the key skills.

So, looking at having a distinction between methodology and method, and we've got eight methodologies and then there'll be different methods associated with those. And looking at repeatability and reproducibility instead of reliability, and also looking at instead of identification of uncertainty, thinking about causes of uncertainty in a qualitative context.

Okay, so what is the VCAA expectation for unit two, area of study two? So, this is the option section. So, we've got some flexibility in meeting this particular outcome. So, the outcome, no matter what option students are going to choose, is that the students should be able to investigate and apply physics knowledge to develop and communicate an informed response to a societal issue that involves physics. Going through our consultation last year and the year before, what we are finding in terms of the options is that almost all schools offer multiple options, many schools organise students to vote for a set number of options, some schools work out the options that they can deliver, and then they have students select from that particular list.

I think a lot of schools, or some schools offer all options, but commonly what's used is a flipped classroom approach, and in the advice materials for the design, which we'll publish very shortly, also talked about the Socratic seminar approach in terms of delivering this particular outcome. Options can be also introduced to students by providing a list early in the year to say, Well, this is what's coming up, think about what you might be interested in. And also, I think to develop a contemporary approach to teaching and have students have a contemporary understanding of physics, you can actually embed some of the key knowledge from the options into the actual content of unit one and two. So, it's another way to make physics, students can see where the relevance is in society and relevance to their everyday lives by embedding it that way, and also, they can then think about what they might want to investigate themselves in terms of promoting student agency.

Okay, with the changes to the options. What we've done is that we've reduced the key knowledge, what we've found in consultation was that the options were just too big for schools to manage. So, all of the options have been reduced to five or six key knowledge points, and we've described the, we've identified the required key knowledge in terms of the physics of, you know, whatever it might be, motion or music or ball sports or whatever it's going to be. But there is a common set of five communicating physics points, and I'll refer to those in a moment.

So, we've got six new options that you can see in the table there on the left, and some of that content has been extracted from previous content units one and two and some from unit four, so that we can reduce overall the content in the physics study design because teachers were saying that the current design was a bit too content heavy. So, we've tried to reduce it without compromising the integrity of the physics course. And then we've modified the rest of those options there.

So, you can probably identify some of the titles that are familiar. We've adjusted some of the titles because the content has been adjusted as well. So again, I think students now have quite, and schools now have quite a lot of choice in terms of what options they may offer. But we are encouraging with this one student agency, that is that students, as far as possible, can choose their own topics, and the way to manage it, I suppose, in class is going by using that sort of Socratic discussion type technique where groups of students can investigate a topic, and the beauty of the changes to the options, as you'll see there in the next slide, is that all of those 18 options have the same set of five dot points that relate to communication of physics.

So, no matter what topic they choose, all of this key knowledge can actually apply to all of the topics. So for all topics, we're expecting that students evaluate the sources of information that they use, that they apply physics concepts to their particular investigation, that they look at data representations, models and theories that are used in their particular selected topic, that they talk about the influence of sociocultural, economic, legal, and political factors in whatever issue they're discussing, and that they apply physics understanding to justify a personal stance or opinion or solution to whatever it is that they were investigating. So, the strength of this is that you can offer multiple options equitably and that you can use these points as a basis of assessment.

**Sam Anderson** - There's another one that's come through. Can you say any more about what students will need to do regarding drawing and interpreting uncertainty bars if they aren't calculating uncertainties?

**Maria James** - It's going to be a very minor aspect of the new study design. We did have the issue of just too much content to cover. So, the review panel, and that, which includes academics, that includes teachers from various schools, various sectors, we felt this was a relatively, a less important aspect to cover and that could be actually covered at university. The real issue got to how you actually did it, and I think most teachers taught that as being plus or minus half the range. But when you, the comment from university academics was that there's technical problems with that approach. It's not actually the best or the right way to do it. So, we thought that rather than complicate things, we'd leave that out totally. Were there any other questions, Sam, that came through?

**Sam Anderson** - There's just one more that's asked, Why are we still using significant figures?

**Maria James** - The level of the level of resolution of different parameters that we measure is still important, you know, if we're going to talk about a measurement of 20 metres per second. That's quite different from going to 20.256. I think students need to understand that notion of the resolution of a measurement, which I think is why resolution has also come into the study design so that students understand that. And then they're taking their own measurements too. They need to recognise that different ways to measure and using different equipment is going to give different levels of resolution. Again, that's not going to be a huge point, and we've specified how we want significant figures to be treated at the front of the study design.

**Sam Anderson** - The weak nuclear force in unit one, area of study two, they've asked, if we emphasise significant figures in one and two, does it mean it is a scaffold for three and four?

**Maria James** - I think everything's a scaffold, and with physics things are going to build on each other. So, you know, recognising that we can't cover everything, you can tie these things up to whatever you are teaching that makes sense in terms of the context that you use. So, we do need to cover significant figures and whatever context you're going to use to explore that is going to be fine. And certainly, scaffolding is important. Even though for all VCAA studies, technically you can enter units three and four without one and two. But we do advise at the front of the study design that if students are going to do that for physics, that there'll need to be some preparatory work because, you know, there is a, a build-up of understanding and it, you know, it's not easy to do everything in the one year. Okay, so am I right to go on? I'll keep going with the assessment tasks because--

**Sam Anderson** - There is a couple more if you're willing to--

**Maria James** - Sure, that's okay.

**Sam Anderson** - At what level do we cover the weak force? Will there be guidance?

**Maria James** - You know, with one and two, my advice there is that you can go to whatever depth you've got time to do and meeting the needs of students. The thing that you refer back to is you go back to the outcome statement. So, you go back and say, okay, have I met that outcome statement? Because in terms of assessment and certainly for VCAA all we require is an S or and N. Have your students met that outcome, that any further assessment in terms of grades, in terms of percentages, in terms of how far you want to go and how far you might want to teach something is going to be up to you. But from our purposes we are saying that you only need to teach so that you meet the, you know, you meet the outcome statement. So, you know, looking at something like weak forces.

Again, that's not going to be a thing that's going to be hugely important or hugely, this is going to take huge significant time, you got to go back to the outcome statement. Okay, so assessment was another big question that people had. They wanted some examples, they wanted to know about how you're going to link to three and four. So, I'm hoping that the next few slides are going to support you with that.

Now again, people talked about units three and four and I've included here not because I want to focus on three and four, but because the opportunities I think for having staged implementation is that you can start to build your skills, the student skills, that they can address the unit three and four tasks when they get around to doing that. So, the students that that do units one and two next year will be exposed to these new task types in units three and four. So, what I've done is for each of the five tasks for units three and four, I've aligned the types of tasks that that aligned to it from units one and two. So, what I'd be doing, I guess, if I was back in the classroom would be that I'd be selecting tasks to support students to be able to then approach the unit three and four tasks in the following year.

So, one of the tasks for three and four is about the application of physics concepts to explain a model, a theory, a device, a designer, an innovation. And a lot of teachers actually already do that as a three and four task. But the ones that we've nominated as a list of one and two tasks in the study design, there's quite a few that link to that. So in our support materials we're going to provide you with examples of each of these different tasks, of units one and two, and that we are expecting that, you know, you can adapt those and use those so that you can develop skills in students to be able to explain a model because we think it's important to explain a model, a theory, a device, a design, or an innovation, not something that we can easily do in an end of year exam.

So, each of those examples there on the left side tasks can do that. You're not limited to the tasks that we've nominated in units one and two. So again, just to reinforce, assessment at units one and two is totally school based. The only thing you report to us is whether students have met the outcomes there's an S or an N. So, you can, you've got lots of flexibility in terms of how you produce your assessment. So, there's a set of tasks that align to that unit three and four tasks. There are other tasks that you can come up with and you're, you know, you're quite free to do it as, you know, whichever way suits your students and your own particular resources.

So as an example of, an explanation of a device, a design or an innovation, I've listed there, and we'll have this again up on our website with our support materials, for each of units one areas of study one, two, and three, and for unit two, area study one, there are some examples that you can use. And you can allocate, you know, different, you can allocate different devices for different students, that they've got individual one to have a look at. You might have small groups of students looking at a particular device, but there's a broad range and it applies therefore right across units one and two. Another task that is in three and four that students will need to be looking at, and again this is one of our current tasks, so student teachers are very familiar with this, is analysis and evaluation of primary and/or secondary data. Now we've specified here including data plotting, identified assumptions or data limitations, and conclusions.

So, we're expecting students to not just look at data and just talk about it, but we're expecting them to actually do some data plotting because we know that students are not good at that, and this is the skill that we want to develop. And then to actually look at how they analyse that data. So, the types of assessment tasks in units one and two that we've listed I've got there on the left side. So, you can use generated primary data or collated secondary data that students have accessed. It might relate to a report of a lab or field work activity that they've done. It might be a modelling or simulation activity, but it has to include data. And then really with the infographic or scientific poster, they're really in presentation mode.

So, we're not looking at those as being an assessment task per se, but that's one way that a couple of ways that you can actually present this particular task. Not that that's how it has to be. Can be a report, but we are expecting that students are going to be plotting their data, working out their scaling, et cetera, for that particular task. And again, I probably don't need to give many examples of that because teachers are already familiar with it. But for each of the tasks that we've listed in the units one and two assessment task section, we've defined everything. So, this is the definition that you will find for the scope for the analysis of primary and a secondary data.

So, we're trying to be as flexible as we can. It's not, you know, all of the tasks if you look at them across schools, you know, might be very different. But you can see in the bold font there that the focus of the task is on assessing students skills and constructing graphs, including scaling, including the use of units, plotting lines of best fit and using appropriate labels. So, they should be able to discuss the significance of trend lines and patterns and relationships in data. That's what we are looking at. So, a handy hint I think because students are coming in at year 11 with very, you know, with a range of different skill levels that you won't be familiar with. I think this type of task is really useful for students to undertake early in this study of VCAA physics so that you can see what their level of skills are in terms of their capacity to analyse data. But it's up to you of course when you want to do that.

We've also got a task at three and four about problem solving, applying physics concepts and skills to real world contexts. So, the types of tasks that we've got at unit one and two that are going to relate to this is the one that's described as problem solving, an important application of physics concepts, which is qualitative analysis, including calculations which is quantitative relating to real world context. A physics reference response to an issue, a critique of an experimental design process or apparatus can relate to this particular type of assessment task. So, an example, and again this will be included in our resource materials is that you might take a simulation that results in the generation of data. Now this type of stimulus material here, which is in an infographic form, can be used actually for a lot of different tasks.

You could use this for an analysis task if you were going to somehow require students to plot data. But it could be, you know, it can be, it can suit quite a number of the different tasks that we've listed for units one and two. People often ask me about can we use structured questions? Absolutely you can use structured questions for any of these tasks. You can use multiple choice if you want to construct multiple choice questions that relate specifically to whatever the stimulus material are that you are using. So, there are lots of ways to be able to assess this. You can see there, and in our example, we've got, we've got a whole set of questions. If you're going to use questions like this, then you probably wouldn't use a rubric. You would probably use a marking scheme.

So, it's up to you again how you assess it, how you, you know, how you want to structure the task. It's all, you know, it's all very open and what you're trying to do is you're trying to establish, you know, where your students are at and how you can help them improve their understanding, their learning, their skills. So whatever mechanism you use to assess that and whatever mechanism you use to report student performance is absolutely up to you. But this sort of task, again, links through to, this is what we mean by a real-world physics application where this relates to climate change.

So, if you're doing that particular option or it relates to unit one, area of study one, you know, you can fit that where you want to fit it and all of these tasks can obviously be adapted to whatever you want to do. But it gives you an idea of the breadth and moving away from just producing something like, or what we normally have at the end of your exam, trying to get students to, you know, have a different experience and to be able to demonstrate their understanding in different ways. So, the data generation here is provided, but you might require that students generate that data themselves as part of their, you know, part of their assessment task. Or it might be like this example here where all students get the same data that they're looking at. It's up to you as to how you structure that.

Got a new type of task for units three and four, which is a comparison and evaluation of two solutions to a problem, two explanations for a physics phenomenal concept, or two methods and/or findings from practical activities. So, it's pretty broad. Again, we've got a number of unit one and two tasks that relate to that particular unit three and four tasks so you can build students' capacities to be able to not be freaked out, I suppose, by this new type of assessment. And just looking at examples here, so a sample task which is a comparison of two solutions to a technological problem. There are, you know, different places in this in the study design where you can have that comparison in terms of a solution to a technological problem.

So, you could look at nuclear fission versus nuclear fusion. You could look at processes within nuclear fission itself, looking at thorium versus uranium, or you know, nuclear fusion, two different techniques. It might be that you look at geothermal versus nuclear energy as sources for society, or evaporative cooling versus refrigeration, truss bridges versus arch bridges, et cetera, et cetera.

There are lots of different types of comparisons of solutions that you might want to have a look at. In terms of the task requirements if you're going to do that, and again, you could think about are all students going to have the same problem to solve? Are you going to allow them to have different problems to solve? You can think again about what are you expecting out of the task and work back from, okay, what are the outcomes, what do I want my students to do? So, in terms of the technological problem, if you're going to precisely state the nature of it, summarise the physics of each solution, again, it's got to be a comparison, identify the criteria to be used in the comparison, and then provide a reasoned argument in support for a preferred solution to actually doing something with the two things that they're comparing. That might be a summation of what the task is going to require, and then you can again build your rubrics based on that.

This is a, currently, we already do this, this is our scientific poster type task. So, we have the application of the design analysis and findings of a student design and student conducted investigation. And that's through a structured scientific poster, which now we're trying to focus on the communication and not just stick all of the information that they've found like a practical report stuck up onto a poster. It's really being succinct in communication and saying, look, this is my investigation, these were my findings. Thinking about the best way to present their findings is really important. So that scientific communication aspect we are still trying to encourage. We've reduced the amount of words in the posters so that students can focus on the communication aspect of it. The tasks that relate to it, things like the report of a lab or fieldwork activity, that can certainly be for work for that unit three and four task.

And then you can use a scientific poster or infographic as a presentation mode. But this also explicitly relates to the unit two area, area of study three, should have said outcome three, that particular report of a practical investigation that does build for students for the unit three and four, unit four area of study two task as it is now. So, you should already be familiar with that. That's my contact details there if you want to contact me after this session if we don't get through all of the questions. But Sam, if you, I don't know if there are any other questions. I'll give you time now to type those in. I'm very happy to take any questions. I'm hoping that this has given you a sense of the scope of the assessment tasks, but also hoping that you understand that they're really flexible, they're really open and what we are looking for is to make sure that the VCAA assessment principles are all met.

So, looking at efficiency, you know, don't over assess, looking at validity. The task has to relate to what the outcome is and what you're expecting students to learn. Balance so that when you look at your set of assessment tasks across units one and two, that students are doing different types of things. And in a way if you want to mimic what we've done with units three and four, because we've certainly done that with having different types of assessment tasks, you can take that back through to units one and two and have a similar set of tasks that you're looking at at that level, and then building students' capacity to handle different types of skills, looking at different ways to express their knowledge and understanding of physics concepts and showing scientific skills. But you're not limited at units one and two, so I'm hoping you're going away with the idea that you can, there are probably tasks you can already adapt to what, you know, to these new ones. You can prepare for the unit three and four, you know, you've got a couple of years to be able to think about how you might do that before we actually have to implement that units three and four in 2024.

So, there's hopefully enough time for you to tweak what you currently do, trial a few different things, and it not being a stressful activity for you, hoping it's manageable. And we have reduced the content a little bit. Certainly, we've reduced the amount that's in the options, for example. We've reconfigured unit one, area of study one in particular. We've trimmed back unit four so it's, you know, we've hopefully made this a bit more manageable and where, you know, you've got some breathing space to be able to work out where your students are at and how you can help them move to their next level of performance. Sam, are there any questions?

**Sam Anderson** -Yes, there are quite a few actually, so we'll see how many we can get through. But if we don't you can follow up directly or through an FAQ. Okay, so the first one we've got is, can I do a unit two, area of study two assessment in groups?

**Maria James** - Yes you can. So again, but you still, you do have to still perform, you still have to report for every student whether they have met the outcome. So, whether some of your assessments are going to be group based. There's not an issue there, but for each student, you still have to be able to determine whether they have met the outcome. And you can use peer assessment as well. So, with students working in groups, it might be that they make assessment about the contribution of each of the other students in their group as well. So totally up to you. But I think because scientifically we do work in groups and we do collaborate, I think it's an important skill. It's nice to encourage, and I think it's more easily done at unit one and two. I think it's more difficult at three and four.

**Sam Anderson** -Okay, great. Another one is, how many lessons/hours should be allocated to the options?

**Maria James** - Oh, I'd say somewhere between two and three weeks. But again, that's up to your, you know, up to your planning and how you do it. You know, are you going to do the options as a separate thing? Are you going to embed them through some of the other outcomes? It's totally up to you how you manage that. But I would suggest that it's going to be two to three weeks of class time. But it also includes students working out of class. We would be expecting, we talk about 50 hours per unit, but there is also the expectation that students do 50 hours of work outside class. If you have a look at the VCE and VCAL guidelines, I think that's stated in there somewhere. So, a lot of the options would probably be an out of class expectation.

**Sam Anderson** -Okay, thank you. In your example of resolution, you have chosen an analogue device, a gas syringe. How do you anticipate students discern resolution using a digital device?

**Maria James** - I think it's, well, digitally, they're much more, they have greater resolution. I think that's a whole point of digital. You probably wouldn't use it in terms of discussions of digital devices. It really just relates to analogues.

**Sam Anderson** -Okay, when explaining a device, design, or innovation, would you recommend a short answer-style response or an in-depth, detailed response?

**Maria James** - Whatever's going to suit, and I think in terms of assessment, it's really about providing students information about where they're at, where they're up to from a VCAA perspective, and not so much one and two, but three and four, we talk about setting tasks that are going to differentiate your students.

**Sam Anderson** -Okay, I've got some questions about plotting here. Is either computer plotting or on paper plotting acceptable? Is there a preference? And someone else that's asked, can graphing and plotting tools be used?

**Maria James** - I think there's merit in both. The proportion to which you do it is going be up to you. But you do have to keep in mind that with units three and four, we still do have a requirement that students plot graphs at the moment.

**Sam Anderson** -Mathematics has changed the wording of line of best fit to line of good fit. Have you decided not to do this in physics?

**Maria James** - I mean, we've defined it one way in the study design, and what that means is that when we have exam questions at three and four, we'd be using that. But if you want to align with math stuff, there's no issue with that, and having students understand that there are different ways of doing things, I think that's important too.

**Sam Anderson** -Is there a difference between structured questions and a test-style assessment which the VCAA sometimes encourages teachers to avoid?

**Maria James** - There's probably not much of a difference. I think the main thing about avoiding structured questions and to be honest, I can't see how you can avoid not having structured questions. If you're going to ask students to explain something, I think having structured questions helps scaffold their responses. You know, instead of saying, well, just describe a device, I think having a set of, you know, like pointers to be able to help them, to help them describe that device is going to be, is important. The main thing about the VCAA position about structured questions is that we don't want students to just have the same type of assessment right through units one, two, three, and four. You know, not always a set of multiple choice and a set of structured questions that all look the same and don't do anything different. So, it's thinking about, and that's why the tasks themselves have changed. If you look at something like a comparison of something, that's a different skill from what we currently do in the exam. And you can still, you know, you can set up tables and you can set up different graphic organisers to do those comparisons. It's a different skill than what they would normally do at the end of your exam.

So, there's nothing wrong per se with structured questions or even, you know, multiple choice. But you've got to keep in mind that notion of balance and that notion of being able to allow students to be able to demonstrate their understanding of things in different ways. And you know, we can use the argument about oral presentations. Are we going to, you know, oral presentations are another way that students can demonstrate their understanding. But some kids are good at that, and some kids aren't, and do you have to teach the skills of oral presentation, et cetera, et cetera. It's about you working out what you think is important to communicate and to demonstrate in physics, you know, what is it important that kids can do, and then that you assess that and hopefully that's going to mean that it'll be balanced and that kids aren't always just doing the same style of assessment.

**Sam Anderson** -Okay, can the areas of study be completed in any order for units one and two or is there a reason why they're in that specific order?

**Maria James** - There's no reason for that particular order. Just it was probably the preference of people who were on the review committee that that was what they thought was logical. There's no set order that you need to do them in.

**Sam Anderson** -Great.

**Maria James** - And you can actually do unit two in semester one and unit one in semester two if that's what you want to do.

**Sam Anderson** -In units three and four, suggested marks are a guideline for the waiting of the individual areas of study. Is there any such guideline for units one and two studies?

**Maria James** - No. So again, because you're really reporting against the outcome statement, different schools are going to spend different amounts of time unpacking those outcome statements. So, I think that's in a sense the beauty of units one and two, that you have got heaps of flexibility. It's not a programmed pause.

**Sam Anderson** -Great, that's the end of our questions.

**Maria James** - Thanks Sam, and thanks everyone. I hope this was useful. And don't forget, you can contact me whenever you want to about any other questions you have.

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