**Monica Bini:** Good afternoon, everyone, and welcome to the Strategies for Assessing Critical and Creative Thinking webinar here this afternoon, being run by the VCAA. I’m Monica Bini, the Capabilities Curriculum Manager for the VCAA, and I’d like to introduce Melissa Pavey. Melissa, do you want to say...quickly introduce yourself?

**Melissa Pavey:** Yes. I’m Melissa Pavey. I’m a Grade 5-6 teacher at a small regional primary school, Glengarry. My roles include PLC leader for the 3-6 team, and viability practice. And I used to work with Monica as a Critical and Creative Thinking specialist teacher a couple of years ago.

**Monica Bini:** Thank you, Melissa. And before we begin the rest of the webinar, I’d like to acknowledge the traditional owners, custodians of the lands on which we gather today all across Victoria and pay my respects to elders past, present and emerging and any Aboriginal and Torres Strait Islander participants we may have with us today. And acknowledge that we have had... Discussions about education on this land have been held for thousands of years, and we continue those today.

So, we’re going to learn about strategies for assessing Critical and Creative Thinking. We’re going to... Hopefully, you’ll gain an insight into assessment and planning and how they can be linked so that you’re planning your lessons with assessment in mind. We’re also going to look at some assessment methods and some examples of those suited to Critical and Creative Thinking.

Now, a few housekeeping things before we get under way. So, just to remind you that the session is being recorded. The recording will be made available to you via the VCAA F-10 curriculum professional learning web page within the next couple of weeks. Secondly, if you do have questions, more than welcome to ask them during the webinar. Please enter them via the Q&A box that you should see there on the right-hand side, rather than the chat box. So, just to reiterate, please use the Q&A box. That helps us to see...to sift through those questions a lot more efficiently than if they were entered in the chat box, and select both host and panellist when sending your question. So, Alicia is hosting F-10 unit today. She might be able to help with answering some questions. So please select us all. And we will keep the chat box open, though, so that, if you’re experiencing technical issues, or we might send you some important URLs through the chat box – so, some of you might ask where something is located on the website, and we’ll send that URL through the chat box as an answer to that. So do have a look at the chat box too, but use the Q&A to actually ask a question. So I think that’s all the housekeeping that we need to do for today, so we can continue on with the webinar.

So, as far as an overview of the session goes, Melissa and I are going to tag-team a bit. She’ll present part of it and I’ll present part of it and we’ll... So you’ll experience us... Just a little bit of disruption as we shift... But it will be seamless, of course, as we shift hosting roles throughout. We’re going to talk firstly about assessment methods for each strand of the Critical and Creative Thinking curriculum, and then finish up with advice on planning and assessment. So we’ll do it that way around.

So, quickly, an overview of Critical and Creative Thinking, just to recap before we get down into the assessment part of it. In sum, I guess, Critical and Creative Thinking aims to develop skills and learning dispositions that support logical, strategic, flexible and adventurous thinking. But it has some learning of knowledge and skills that help foster that. And those are organised into strands, the first one being questions and possibility. And that’s really about understanding. It’s supporting students to understand the nature of questioning – or the nature of good, effective questioning – and the nature of processes and techniques to develop ideas. So what are some processes and techniques we can use to develop ideas? For reasoning, it’s really all about how we can compose, analyse and evaluate arguments and reasoning. And finally, metacognition is really around the use of strategies, so understanding what some strategies are that we can use to understand, manage and reflect on our thinking and learning processes. That’s fundamentally what the curriculum is all about. That’s a little snapshot there.

So, what you do is you teach knowledge and skills related to that and then undertake some assessment of those, and which is where we’re going to focus today. And, obviously, the achievement standards are important there too.

OK, so we’re going to look at each strand and then talk about assessment strategies that can be used for each strand. Now, with questions and possibilities, we’ll start off with those. So, when faced with a challenge, can I identify a helping strategy? Do I know how to use it? And can I reflect on its usefulness? No matter which level your kids are at, no matter whether you are an F-2 or 9 and 10, this is, roughly speaking, what the curriculum is asking kids to be able to do, if you like. Now, obviously, look at the content descriptions, look at the achievement standards to see how that plays out in those levels. But, given we’re presenting to you today, teachers across right from Prep all the way to Year 10, this is a way of encapsulating what the curriculum is all about.

So it’s really... I’ve bolded ‘challenge’ there because it really... Sometimes you don’t need to go to strategies that’ll help you come up with ideas, because it’s really easy to do that. It’s really when faced with difficulties. So you want to give students an opportunity that involves a difficulty for them, when they really need to go and use the strategy and can see how useful it is. And challenges might include something like analysing and constructing questions for a purpose, managing preconceptions, and generating ideas when they’re stuck. And I’ve got those from the curriculum.

If you look at the content, that’s effectively what it covers as you go through different levels. Some of them focus on preconceptions. I think it’s 7 and 8 from memory. And you’ll see that we gradually learn how to analyse and construct and evaluate questions and how we might generate ideas when we’re stuck.

So, do students know how to use a particular strategy or a tool that you’ve taught them? Can they talk about it? Can they identify some ideas about where it could be used elsewhere – can they transfer their learning? Those are some things that you might want to monitor in terms of assessment.

So, two assessment methods we wanted to focus on in relation to questions and possibility were the use of a taught questioning tool, for example, a lotus diagram, and Melissa’s going to unpack that – she’s taught that to her students. So you might teach students a relevant questioning tool, like the lotus diagram. And we’ll go over and look at another sort of strategy called the compass points strategy, and then look and see how that can be used as an assessment method, just as an example assessment method, so you’ve got something specific to take away with you.

So, Melissa, you are going to take over here. And now this is where I will seamlessly pass the host to you. Here we go.

**Melissa Pavey:** OK, I’ll start talking while you do that.

**Monica Bibi:** Yep.

**Melissa Pavey:** I first came across the lotus diagram through the Science in Schools program, which happened a long time ago. It’s a type of concept mapping, but it’s quite structured, and it can be used in a lot of different ways. We initially taught the kids how to use it very explicitly, and we really wanted to focus in on analysing and constructing questions. The kids had to do some research, and we didn’t think that their questioning was very strong from what we’d seen. And we taught them the lotus diagram as a tool to record their questions, and then be able to expand on them, and also just to record their thinking.

So, I will get one up for you to have a look at. This is the one that we did largely around geography, some history, mostly history, Australian history, and some literacy as well. You can see that the colours correspond to each box. So, in the centre, we’ve got Australia as our big topic, and then we pre-filled the nine squares around the outside. Sorry – eight squares around the outside. We chose the topics Aboriginal history, arts and culture, colonisation, and you can see we left one there as a student choice, which was going to be a historical event. But as they researched, they would come across something that they might like to find out more about. They then branch out into those separate areas, so you can see around each of those topics, there’s space for the kids to write.

Our initial instruction was for the kids to write any questions they had about any of those topics or concepts and write them in black, or if they already had some knowledge, they could add that as well. It was really important that they record it in black initially and leave some space for more questions and more information that they would find.

Now, I’ve put in some examples here. I did type it up because the writing was really messy, but these are some from one of my students, and this is what she recorded about Aboriginal history. These were her first thoughts. So, you can see that she knows Aboriginal culture is one of the oldest on the planet. She has a question about astronomy and the emu in the sky – there had been a documentary about that recently. She had a question about, do we know all of Aboriginal histories? No-one wrote it down. So you can see that she’s recording some questions, and also some things that she already knows.

The kids did a good job of writing questions, but we knew that they didn’t know how to sort their questions, they didn’t know what kind of information those questions were going to elicit. So, the next day, we did an explicit lesson on open and closed questions and had the students sort them. So they worked out pretty quickly that different question stems would lead them to different kinds of information. I think one child said to me, “Oh, if we ask when and who, we’ll find out facts. If we ask how and why, it might not be so easy to find the information – it’s much broader.” So it did lead to a really good... It was a good piece of formative assessment for us on where the kids were at with their questioning, and we planned an explicit lesson around that.

And there’s another example here about colonisation. She... Here, you can see that she also made some assumptions. So, Monica talked before about managing preconceptions, and the example here about, “I think Aboriginal people were curious at first and then probably really confused and angry.” This student realised that she didn’t really know if that’s how they felt. We had a discussion about it. We unpacked that. And then that led her on to some further questions. She really wanted to find out from there how people really did feel about colonisation and where she would find that kind of information.

I would also make the point that it was difficult sometimes to split the curriculum while we were focusing on questioning. Reasoning came in. Some metacognition, while the kids were recording their ideas and their thinking. So it really was about us just deciding how we wanted to focus our time and our energy there.

It also really lent itself well to opening up dialogue with the kids and having conversations about their questions and the assumptions that they were making.

Whoops. I think I skipped one there. Yep.

After that, we sent the kids off to do some research, and not all of their questions or their information was recorded on this tool, but the second time they went to do it, we got them to record in blue. And the third time, the final time, we got them to fill in this tool, we had them record in red, because we could then track the development of their questions and their thinking. And the kids could also see where their interests really were. Some of them would find that one area really caught their interest and they were adding a lot of information, or they were very curious about an area and they were adding a lot of questions. So that was a really good way to track their thinking and their learning about the topic over that period of time.

A few of the statements also turned into questions. They had a statement that they’d made, and then they started to wonder whether they really knew everything about that. And that often came up through discussion as well.

I think I’ll carry on there. That’s probably all I need to talk about with that one.

The other point that I would make is that some of these then become their own branch of the diagram. So, for example, on this one, with colonisation, this student was really interested in whether any histories were written by Aboriginal people. And if not, why not? And that became its own branch. If you imagine that then branching out into a third section, she had a lot of questions around that idea.

And I’ll move on to the next one. I understand this is very hard to see, but you can see that this is her finished product. She didn’t fill in everything. So you can see that she wasn’t that interested in Federation. And that’s OK. Other students were, and they did end up sharing and learning from each other. You can see that she’s added some more information in red and blue. So, she did keep coming back to it and adding more of her thinking so that we could see it. The thing that we did after this was that students researched the topic they were most interested in, created a project about it, which had a rubric, and give each other feedback, and they read through each other’s projects and learnt a lot about Australian history. And they’ve published them to share.

OK, so, Monica, over to you. I’ll go to the next slide.

**Monica Bini:** Thank you, Melissa. So, we’ll revisit the lotus diagram a bit later, but you can see in... You could work with a tool like that to help you assess the questions and possibility part of the curriculum and, as Melissa said, some aspects of reasoning. And we’ll revisit the lotus diagram in the context of the reasoning strand a little bit later on.

So, in terms of another example, we came across this tool. It’s in Ritchhart’s book called Making Thinking Visible. And there’s quite a lot of useful tools in that one. One of them is around managing... Well, It could be... It’s not designed... It’s not there as a way to manage preconceptions. It’s just called Compass Points. And there’s the tool. So kids writing on the top left in relation to a particular provocation. Like, for example, let’s say, the provoca... You know... If we were to get rid of school uniforms. So what are they excited about with getting rid of school uniform? What might they be worried about? What would our needs be in terms of the information, or what we need to know if we were to get rid of them? What are the sorts of things we’d want to receive or get or have? And then what’s their position about that? Or what do they think the next steps are, and what are their suggestions?

And it struck me, having a look at this one, that this might be a good one for actually helping as a tool for kids to make their thinking more visible around managing preconceptions. So, I’ll give you a moment just to think about what you... Whether you can see that as well. And I’ve got...I think I’ve got on the next slide that we’ve got this as an activity, but perhaps we’ll just give you a little bit of thinking time. How could this be a strategy for managing preconceptions? We’ve got quite a lot of participants today. So I think our plan of putting answers in the chat may be a bit frustrating for you, but have a think about how this could be used as a strategy. What leapt out to me there... I’m just going to wait for a second to allow you to get your thoughts together. Just maybe think to yourself, what is it about this that you thought, “Ah.” If you wrote down... If you’re a kid writing down these things, how could it help you see what your preconceptions might be about getting rid of school uniforms, or whatever the other provocation is?

So, what I thought it would do is force some preconceptions to the surface, because you’ve required – or lack of preconceptions, even – you’re required to think about all of those boxes. And you can see, for example, whether you’re lopsided in your thinking. Perhaps there’s a whole bunch of excitements there about finally getting rid of school uniforms, you know, and not too many worries. There’s a kind of position there in the position or the stance that this is going to be great, you know, because there’s... Or the opposite. So it can show, for example, whether kids are balanced in their thinking, whether, I guess, they can...if those preconceptions are brought to the surface, they can perhaps be managed then, using this tool through the needs box. So, for example, if they really can’t think of any worries at all about getting rid of school uniforms, maybe they can put in the need box that they need to do a bit of research to ask if there are actually any problems with getting rid of a school uniform. I mean, after all, we do have them. There must be a reason for having them. So that could go into the needs part of the compass as a way to manage preconceptions by finding that out.

That’s the thought that I had. You might yourself be able to see some richer ways of using that tool. As I said, it’s not a tool designed specifically for that – it’s just compass points. But I thought it would be useful for this to help the kids. Sometimes we’re not always aware of what our preconceptions are, and just this will help us get those on the page for those.

In terms of the curriculum, the curriculum talks differently about conceptions at F-2. It says, “How could your worries and excitement affect what you think of stances that are different to you?” So at F-2 it’s more like, “I’m so excited,” but I imagine a lot of primary schools it’s about getting a uniform, isn’t it? (LAUGHS) They want to wear one. (LAUGHS) “We’re gonna get a uniform!” So they’re so excited. So they might... If some kid sticks their hand up and goes, “Oh, I don’t know. I don’t want to wear a uniform,” you know, how is that going to affect how they approach a stance that’s different to them?

That’s what the curriculum is asking kids to think about at F-2, although it’s the angle or the lens that we take at F-2, whereas at 7-8 it’s slightly different. You would use a tool to say something like, alright, you’ve put down your excitements and worries about getting rid of the school uniform. Check those against your suggestions, because the curriculum here is saying, are our preconceptions limiting us? And obviously you might want some preconceptions, around... I don’t know, safety is a typical example where you don’t want to chuck those out of the window. But we want to be thinking at 7 and 8 about whether our preconceptions are unduly limiting the kind of suggestions we have or the ideas we might have about something, whether it might be... I mean, getting rid of school uniforms is almost like a yes or no, but it might be some compromise, perhaps, in the end, about how we could modify school uniform, the things you don’t like about it. So, and here we might say, alright, what are our preconceptions limiting the kind of ideas we might have? So it’s slightly different emphasis, but it’s still about managing preconceptions.

So what you do is you...if you find a tool like the compass points, you use the curriculum to work with students a little bit differently, with the same tool to be able to meet the content...you know, teach the content descriptions and meet the achievement standards.

Alright, so, in terms of assessment, you’d be asking, can the student draw on a tool like this to reflect on how they manage their preconceptions? So you might be able to talk, just the same as I did before, about how the worries and excitements then help them to see what they needed to know, or how it influenced their suggestions, etc. You can also ask them to identify something else where the tool would be useful for. What else could we use this for in terms of... What else might we have preconceptions about that we could then bring this tool in to use again. So, fostering that independent learning. And that’s... So, in other words, you’re looking to see if a kid is in control of their thinking, if you like.

So, moving on to the reasoning strand. This is all about whether a student has the knowledge and skill to develop, analyse and evaluate the reasoning aspects of arguments. So, arguments typically have a bunch of premises, which are true or not true or partly true, and then a conclusion, and a bit of logic that’s used to get from the premises to the conclusion. And, obviously, we have learning areas like science and history and so on help us to understand how to get to the truth of those premises. How do we check our sources, and so on. But the CCT reasoning here is really a gap filler, focusing a lot on the logic part of it, which isn’t really so explicit in the learning areas. So it draws that out, because that’s also part of what it is to reason. So, can I analyse and evaluate reasoning? Does this argument make sense? Do I know how to apply reasoning and learning area knowledge and skills so they come together to assess the strengths of arguments? In other words, whether it’s both true and logical. You can have a logical argument that’s just not true. (CHUCKLES) But you can also have arguments that are true premises, they just don’t...when they’re put together and then we draw a conclusion from those, it just doesn’t make sense. So you really need to look at both of those things together. And the curriculum takes kids through some knowledge and skills to support that, and then we assess it against the achievement standards.

So in terms of assessment methods, one of the really simple things to do here is, if you’ve taught some reasoning areas to kids like contradictions, what they are, inconsistency, something like that, then you give them some text that has some reasoning errors in it and see if they can find the contradictions, or find whatever the error is that they’ve been looking at. It might be something to do with cause and effect – you know, that they’re getting that muddled up somehow. You’ve taught them a bit about that. And can they find in this text how someone else has muddled up their own reasoning?

The other thing you can do, sometimes reasoning errors are used deliberately to create a certain drama or to create...or for comedy. So you can see...again, you can see the kids can actually use those to create those sort of effects, which means that it’s evidence that they’re aware of what the error is, they’re aware of the effect that the error can have.

Sometimes they’re political effects as well. Like, equivocation is often used by politicians. In other words, equivocating between the meaning of things. You’re kind of a little bit ambiguous in... Or you’re shifting between the meanings of things, because they just want to feel out what people think of what they’re saying, so they’re deliberately equivocating and deliberately using that as a kind of political ploy. And is the kid aware...or student aware of that? And can the student apply it in their own construction of their own text?

So, another thing to do for reasoning is it looks at argument structure. I used the words premises and conclusions before. So, can a student analyse an argument? Because natural writing is often all over the shop. It’s not neat and tidy. So, can they identify the structure of it, where the conclusion is, where the premises are, you know, how the reasons underpinning, or the objections that are then counted, the little mini arguments that might be part of a bigger argument.

Can we then select, analyse and evaluate arguments representing different or opposing perspectives? So, this is another assessment method. So, in other words, it’s really useful, for example, in dialogue with peers who disagree with you to then account for your own view, to engage with an opposing perspective, to perhaps challenge through counterexample. Those things are in the curriculum. Can they do that? But you could in dialogue... And because it’s dialogue, you can hear it and assess it, you can... The evidence is right there. The kids are required...the students are required, right on the spot, to be accountable for their thinking in real time. And it’s... And I guess to help others think, as well, to be accountable for their thinking. But, of course, you can also use a text-based case study or an inquiry. They might go and research some opposing perspectives and analyse and evaluate those arguments there.

So those are all different ways you can look at assessing reasoning. But if you do use dialogue, make sure you use something that is contestable, that really has different and opposing views, to get an argument going. Otherwise, it’s difficult to assess it.

OK, so we can use the lotus diagram. In fact, if you go to all the trouble to teach students how to use one, you can not only use it for questions and possibilities, you can also use it to understand...to assess understanding of argument structure. And how could it be used for that? Let’s have a look. So, here you might have a lotus diagram where, right in the very, very middle is the conclusion to a very big argument, if you will, or point of view, to say that volunteering in your local community is good for the volunteer and it’s also good for the community. That’s what I think in the end.

So why do I think that? Well, look at the surrounding coloured boxes there. I think volunteering is going to be good for you and the community because it might...volunteering might help with your career, people might like their local community more, it can be healthy for you, and it gives the community value for money. So, those are the premises, if you like, backing up the main conclusion there about volunteering being a good thing. But then, it’s obvious that sometimes those premises, like volunteering can be healthy for you... If that’s not immediately obvious, it might need its own little argument to back it up. It’s like, well, how do you know?

So then the orange squares or those coloured squares become the conclusions for their own argument, which we might call little intermediate arguments. So, I know volunteering can be healthy for you because – or I’m going to argue that it’s healthy for you, that’s my little mini conclusion – because, when you volunteer, you make new friends. And we all know, when we make new friends, we won’t be as lonely. You might feel like you’re making a difference to someone’s life. And, you know, we feel like we’re flourishing as people and it makes us healthy that way. Volunteering, depending on what you’re doing, could give you more exercise and improve your physical health, and it can distract you from your own worries. So, all of those things... And I might have evidence to show that, I might have data and research to back all of those up, examples, case study scenarios. We do in a normal inquiry. But all that the lotus diagram is doing is actually just showing us the structure of an argument, how an argument might basically be structured.

And if a student handed in a piece of text or some sort of multimedia presentation or something that was that clearly structured, I bet...I’m going to say he’d be really happy. Am I right, Melissa? (LAUGHS)

**Melissa Pavey:** Absolutely. (LAUGHS)

**Monica Bini:** I mean, as I said before, natural writing can be a little bit all over the shop, and you don’t want the writing to be boring. But you can kind of...a kid could use a tool like a lotus diagram to help them structure and develop their point of view, their argument about volunteering, their inquiry into volunteering, as part of Civics & Citizenship in this case, for example. And then it’s part of their plan. And then they write it up in an interesting...in an interesting way. They’ll also be able to see clearly where the gaps in their thinking are, where they might need to do a bit more research, but it’ll help them set it out as they go. Or, as they’re doing research, and they might come across some new information, they can pop it in – they can ask themselves, “Oh, I just saw this article which showed that someone felt really good about volunteering because they were making new friends. Which...which part of my argument does that fit with? Oh, I think it’s going to fit with the bit about being healthy for you.” Or, “I think I’ve got a new premise that it might be healthy, and one of the reasons it’s healthy is because you make friends. I wonder if there’s other reasons that it can help you to be healthy.” So you can go back and forth using the lotus diagram as a tool like this.

And, of course, it can be made more or less complex, depending on whether your students are...you know, which level they’re at and how much prior knowledge they have and so on. There’s boxes here that I’ve deliberately left empty, because you don’t have to fill them all.

OK. Yeah. And that’s just a zooming-in example. Hopefully, that’s a bit clearer for you.

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