Linking Design and Technologies and the capabilities – webinar presentation

Word version

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Contents

[Notes on this version 2](#_Toc116650194)

[Objectives 2](#_Toc116650195)

[Design and Technologies and the development of the capabilities 2](#_Toc116650196)

[The capabilities and support for excellence in Design and Technologies 3](#_Toc116650197)

[Planning for delivery and assessment of the capabilities 3](#_Toc116650198)

[Design and Technologies and Critical and Creative Thinking 4](#_Toc116650199)

[Critical and Creative Thinking example, Levels 7 and 8 4](#_Toc116650200)

[Design and Technologies and Personal and Social Capability 7](#_Toc116650201)

[Personal and Social Capability example, Levels 5 and 6 7](#_Toc116650202)

[Design and Technologies and Ethical Capability 9](#_Toc116650203)

[Ethical Capability example, Levels 7 and 8 9](#_Toc116650204)

[Design and Technologies and Intercultural Capability 12](#_Toc116650205)

[Intercultural Capability example, Levels 3 and 4 12](#_Toc116650206)

[Transfer to new situations 14](#_Toc116650207)

[Assessment methods 15](#_Toc116650208)

[Recap – What to look for when selecting a capability 15](#_Toc116650209)

[VCAA resources 16](#_Toc116650210)

[Example assessment resource – indicative progress 16](#_Toc116650211)

[Formative assessment 16](#_Toc116650212)

[Contact 17](#_Toc116650213)

Notes on this version

This Word document is based on the ‘Linking Design and Technologies and the capabilities’ webinar presentation by Monica Bini, VCAA Capabilities Curriculum Manager, and Leanne Compton, VCAA Design and Technologies Curriculum Manager.

All content in this Word document is drawn directly from the webinar PowerPoint and its speaker notes. This Word version uses the same structure but has minor changes that stem from the conversion to a text format and that improve accessibility for all readers. For example, in instances where additional content or concepts were presented in diagrams within the original PowerPoint presentations, image descriptions have been used in this Word version.

This Word document and the webinar PowerPoint are also companion resources to the web resource [Linking Design and Technologies and the Capabilities](https://www.vcaa.vic.edu.au/curriculum/foundation-10/resources/design-and-technologies/Pages/TeachingResources.aspx). They draw on and further unpack this web resource.

Objectives

To gain insight into:

* identifying strong links between Design and Technologies programs and the capabilities
* teaching and assessing the capabilities through Design and Technologies.

Design and Technologies and the development of the capabilities

Design and Technologies make a significant contribution to the development of the four Victorian Curriculum F–10 capabilities: Critical and Creative Thinking, Ethical Capability, Intercultural Capability, and Personal and Social Capability.

One of the aims of the Design and Technologies curriculum is for students to learn how to transfer their knowledge and skills from Design and Technologies to new situations, which is critical to developing a capability.

Transfer of knowledge and skills needs to be scaffolded for many students. Generally they will not learn how to use what they have learnt through Design and Technologies for life in general without some guidance.

Image description: A feedback loop diagram illustrates how learning in Design and Technologies can be transferred to the four capabilities and how the four capabilities feed back into this learning. The specific Design and Technologies learning listed as examples are the following: Problem-solvers, Innovative thinkers, Collaborators, Human-centred and Environment-centred.

The capabilities and support for excellence in Design and Technologies

The capabilities contribute discrete knowledge and skills that support Design and Technologies.

There is a feedback loop that in turn develops student understanding of these discrete knowledge and skills through experience gained in the application of these discrete knowledge and skills in the context of Design and Technologies.

Image description: A feedback loop diagram illustrates how the four capabilities contribute discrete knowledge and skills that support Design and Technologies learning and how application of these discrete knowledge and skills feed into development of the four capabilities. The discrete knowledge and skills listed as examples are: Critically analyse and respond to design changes; Factors that inform design processes; How people in Design and Technologies fields contribute to society.

Planning for delivery and assessment of the capabilities

Teaching explicitly is the key to teaching and assessing the capabilities and requires identifying and unpacking a capability’s knowledge and skills, which are found in the relevant capability’s content descriptions. Capabilities content descriptions are generic and abstract and need to be given life and meaning in appropriate contexts.

Students are explicitly introduced to capabilities knowledge and skills in learning area contexts. They apply capabilities knowledge and skills to a learning area context and then reflect on this application to nuance their understanding and progress their knowledge and skills. This more nuanced understanding is then applied in the future.

Building skills in capabilities works best when there is a ‘Goldilocks’ challenge: not too hard and not too easy. For example, learning strategies to help students be adaptable is something that can be taught easily enough, but buy-in from students and rich learning conversations will only occur when students are challenged in a way that really requires them to be adaptable.

Creating challenge begins with knowing students and with familiarity with the curriculum. It also involves the teacher having good knowledge of the curriculum area to have the confidence to then work with student needs.

In terms of assessment, explicit teaching builds shared language that enables you to provide feedback to students and for the student to be able to understand it.

The achievement standards define the quality of learning that is expected at that standard.

Shared language, together with the achievement standard that the student is progressing towards, enables you to set clear expectations of what the work should contain. It allows student thinking to be more transparent, allowing you to collect evidence of their thinking. This is important in the capabilities. Students should be demonstrating in a given context that they understand and can apply the knowledge and skills that they have been taught and ideally there should be more than one opportunity to do this, so that you make an on-balance judgement over a period of time.

Having a learning continuum supports you in identifying student progression and to identify the next steps in student learning, which in turn informs teaching and learning strategies to get there.

Design and Technologies and Critical and Creative Thinking

The table below gives an overview of the relationship between Design and Technologies and Critical and Creative Thinking.

|  |  |  |  |
| --- | --- | --- | --- |
| **Critical and Creative Thinking strands** | Questions and Possibilities: * Effective questioning
* Processes and techniques to develop ideas
 | Reasoning:Compose, analyse and evaluate arguments and reasoning  | Meta-Cognition:Strategies to understand, manage and reflect on:* thinking
* problem-solving
* learning
 |
| **Design and Technologies and Critical and Creative Thinking mutually support students to …** | generate innovative design ideas | critique and communicate designed solutions | manage and reflect on the application of design and systems thinking to generate a designed solution |

Broadly speaking, if students are going to be working on generating design ideas, there might be a link to the Critical and Creative Thinking Questions and Possibilities strand. If something about a design solution is contested or debated – typically for and against – then there might be a link to the Reasoning strand. Intentional and explicit management and reflection of design and systems thinking might link to the Meta-Cognition strand.

Many of you are probably thinking ‘will link’ but if students already know the capabilities content and have a good level of skill you may not need to explicitly teach new capabilities knowledge and skills but rather continue to apply, consolidate and reflect on background knowledge.

When we say ‘linking’ to Critical and Creative Thinking, what we mean is working with students to help them develop their critical and creative thinking in general, that is, to help them see how Design and Technologies contributes to this, and/or identifying the discrete knowledge and skills in the capability that will support Design and Technologies.

Critical and Creative Thinking example, Levels 7 and 8

Explicit teaching

Imagine that a teacher is planning for a unit that will include students having to represent and discuss ideas. Is there a link between Critical and Creative Thinking and Design and Technologies regarding this?

A relevant Design and Technologies Levels 7 and 8 content description is:

Generate, develop and test design ideas, plans and processes using appropriate technical terms and technologies and including graphical representation techniques [(VCDSCD050)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDSCD050).

A relevant Critical and Creative Thinking content description is:

Consider a range of strategies to represent ideas and explain and justify thinking processes to others [(VCCCTM040)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCCCTM040).

Both curriculum areas help students to explain and justify their representations to others and to use their knowledge of graphical representation techniques to communicate to audiences.

Design and Technologies can help students understand how to represent ideas. Critical and Creative Thinking prompts teachers to guide students to understand representation as a strategy and to focus on the strategic thinking involved as part of their lesson planning.

Here teachers often say that good teachers would do this anyway, without prompting from Critical and Creative Thinking. This is a good sign of a strong link between the curriculum areas! It is contingent though on the Design and Technologies content description here being unpacked in a particular way. Linking to Critical and Creative Thinking helps to ensure that everyone is a good teacher, but also more subtly, it helps with whole-school planning. In this case, Year 9 and Year 10 teachers can easily be aware that this link has been made in Years 7 and 8 and all classes in Years 7 and 8 would be treated the same way.

So, in general, capabilities can help to shape how Design and Technologies is unpacked to then help learning in Design and Technologies, but also help develop the capability.

Assessment

The following table uses our example above to demonstrate how assessment of Critical and Creative Thinking occurs along a learning continuum.

Here we see the underlying content description in the middle of the table and the relevant aspects of the achievement standards at the top, with some suggested ‘I can’ statements that reflect the achievement standards along the continuum.

|  |  |  |  |
| --- | --- | --- | --- |
| **Critical and Creative Thinking achievement standard extract** | Students represent thinking processes using visual models and language. (Levels 5 and 6) | Students use a range of strategies to represent ideas and explain and justify thinking processes to others. (Levels 7 and 8) | Students identify, articulate, analyse and reflect on their own and others’ thinking processes. (Levels 9 and 10) |
| **Critical and Creative Thinking content description, Levels 7 and 8** | Consider a range of strategies to represent ideas and explain and justify thinking processes to others [(VCCCTM040)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCCCTM040) |
| **Illustrative ‘I can’ statements** | I can use a range of graphical representation techniques. (Levels 5 and 6) | I know the strengths and limitations of techniques; I can discuss these with others; and I can use my knowledge to communicate to audiences. (Levels 7 and 8) | I can evaluate techniques used and identify strengths and ways to improve. (Levels 9 and 10) |

Students would be taught different techniques to create graphical representations, such as SCAMPER, SketchUp or PMIs. Part of the teaching would include building student knowledge of the strengths and limitations of the technique, which is then applied in context to develop their critical and creative thinking. This would, of course, also involve the unpacking of relevant Design and Technologies content descriptions.

Bringing together teaching, learning and assessment

The following table shows how student learning progresses from Levels 5 and 6 to Levels 7 and 8, with planning providing opportunity for students to reach towards Levels 9 and 10.

The targeted content description is a Critical and Creative Thinking content description, Levels 7 and 8: Consider a range of strategies to represent ideas and explain and justify thinking processes to others [(VCCCTM040)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCCCTM040).

|  |  |  |
| --- | --- | --- |
| **What is explicitly taught** | **Alignment to achievement standard extracts** | **Aligned learning activities**Students are provided with the opportunity to: |
| Different techniques for graphical representation  | Levels 5 and 6: Students are taught techniques that will enable them to represent thinking processes. | Practise constructing graphical representations |
| Strategic thinking (strengths and limitations of the techniques) | Levels 7 and 8: Students are taught strategic thinking, which will support them to explain and justify their thinking processes.Levels 9 and 10: Students are taught strategic thinking, which will support them in their reflections.  | Engage with design challenges where more than one kind of representation would work, leading to a need for discussion and communication with others and reflection |

In terms of assessment, you are providing opportunities for students to demonstrate their knowledge of graphical representations, and their strategic use. Evidence for this would be found in the discussion they undertake and their reflection and evaluation, as well as in the graphical representation itself.

The skill is in applying that knowledge to different challenges and problems within a given challenge, and in the practical rendering of techniques involved.

Underpinning all this is explicit teaching.

Design and Technologies and Personal and Social Capability

The table below gives an overview of the relationship between Design and Technologies and Personal and Social Capability.

|  |  |  |
| --- | --- | --- |
| **Personal and Social Capability strands** | Self-Awareness and Management: * Regulate, manage and monitor their emotions
* Interpret and assess their personal characteristics
 | Social Awareness and Management:* Participate in positive, safe and respectful relationships
* Critique societal constructs and discrimination
* Negotiate and collaborate
 |
| **Design and Technologies and Personal and Social Capability mutually support students to …** | develop knowledge and skills to work independently and show initiative  | develop skills for collaborative problem-solving and to critique societal constructs when creating and communicating designed solutions  |

Knowledge and skills from Design and Technologies and Personal and Social Capability both support students to work independently and collaboratively and to problem-solve. They also support students to critique societal constructs when creating and communicating designed solutions, the most obvious example being stereotypes such as wood being for boys and fabric for girls.

Personal and Social Capability example, Levels 5 and 6

The example outlined in the table below focuses on adaptability, which is important to Design and Technologies. This links to the Personal and Social Capability sub-strand Development of Resilience.

Knowing how to adapt and how to evaluate and reflect on attempts to be adaptable is learnt in the context of Design and Technologies. How to adapt in engineering will be different to food specialisations, but the importance of being adaptable is something they have in common. This supports students in recognising the general value of the importance of adaptability, and its essential role in meeting any challenge, which helps to develop the capability in general.

Assessment

The following table demonstrates how assessment of Personal and Social Capability occurs along a learning continuum. Assessment would occur in the context of Design and Technologies.

The two underlying content descriptions are in the middle of the table and the relevant aspects of the achievement standards at the top, with some suggested ‘I can’ statements that reflect the achievement standards along the continuum.

Consider the content descriptions in the table. Knowing what it means to be adaptable and to work independently in an effective way is partly general understanding but also specific to Design and Technologies – how do we be adaptable and independent in this context?

|  |  |  |  |
| --- | --- | --- | --- |
| **Personal and Social Capability achievement standard extract** | They persist with tasks when faced with challenges and adapt their approach when first attempts are not successful. (Levels 3 and 4) | They describe the influence that personal qualities and strengths have on achieving success. They undertake some extended tasks independently and describe task progress. (Levels 5 and 6) | They reflect on strategies to cope with difficult situations and are able to justify their choice of strategy demonstrating knowledge of resilience and adaptability. (Levels 7 and 8) |
| **Personal and Social Capability content descriptions, Levels 5 and 6** | Describe what it means to be confident, adaptable and persistent and why these attributes are important in dealing with new or challenging situations [(VCPSCSE027)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCPSCSE027)Identify the skills for working independently and describe their performance when undertaking independent tasks [(VCPSCSE028)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCPSCSE028) |
| **Illustrative ‘I can’ statements** | I know how to change the way I do things and try again. | I know why adaptability is important and can describe progress with reference to how I adapted. | I can link coping with challenge to adaptability and evaluate my choices. |

Bringing together teaching, learning and assessment

The following table shows how student learning progresses from Levels 3 and 4 to Levels 5 and 6, with planning providing opportunity for students to reach towards Levels 7 and 8.

The targeted content descriptions are two Personal and Social Capability content descriptions, Levels 5 and 6:

* Describe what it means to be confident, adaptable and persistent and why these attributes are important in dealing with new or challenging situations [(VCPSCSE027)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCPSCSE027)
* Identify the skills for working independently and describe their performance when undertaking independent tasks [(VCPSCSE028)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCPSCSE028).

|  |  |  |
| --- | --- | --- |
| **What is explicitly taught** | **Alignment to achievement standard extracts** | **Aligned learning activities**Students are provided with the opportunity to: |
| Ways to adapt | Levels 3 and 4: Students are taught ways to adapt, supporting them to demonstrate their ability to adapt their approach. | Work with shorter challenges requiring different ways to adapt |
| The role and importance of adaptation and its link to resilience and working independently | Levels 5 and 6: Students are taught connections between adaptability and progress, supporting them to describe task progress. | Undertake design challenges where unexpected things happen, requiring adaptation; and include an explicit requirement to describe progress and reflect |
| The relationship between adaptability and working towards goals | Levels 7 and 8: Students are taught connections between adaptability and goals, which supports them to reflect on their choice of strategy. |

When designing learning activities to help develop the skill of adaptability and its link to working independently, the trick is to try to provide opportunities for every student to adapt. One way to do this might be to introduce unexpected changes that then require adaptation, for example, introducing new data on user needs or on what we know about cost or sustainability of materials, or unforeseen supply chain issues.

Design and Technologies and Ethical Capability

The table below gives an overview of the relationship between Design and Technologies and Ethical Capability.

|  |  |  |
| --- | --- | --- |
| **Ethical Capability strands** | Understanding ConceptsUnderstanding and applying key concepts and ideas to:* ethical issues
* outcomes
* principles and values
 | Decision Making and Actions* Ways to respond to ethical problems
* Factors that influence ethical decision-making and action
* Application to different contexts
 |
| **Design and Technologies and Ethical Capability mutually support students to …** | identify ethical issues in a range of contexts relevant to design and technologies, and analyse stakeholder perspectives  | analyse the economic, environmental and social impacts of a designed solution that is in response to an individual or community problem; discuss the value and potential harms and benefits of a designed solution for society and the environment; and critique the ethical aspects of design processes |

Ethical Capability is mostly concerned with the big questions of how we ought to live and what we owe each other (where our responsibilities lie). When this is open to debate, there might be a link to Ethical Capability, in that students will need to draw on knowledge from this capability to help develop and defend a position.

An example is deciding between poly-cotton or synthetic fabrics that might last longer. There are also dilemmas regarding materials like plastic, in that the value it contributes is not always negative.

Ethical dilemmas like this all share the common characteristic of any course of action entailing consistency with a particular value(s) or ethical principle but transgressing another. Dilemmas do not have one ‘right’ answer and in these cases when assessing students for Ethical Capability look for the justification of their position, not the position itself, noting of course that their response should be coherent, supported by evidence and so on.

Ethical Capability example, Levels 7 and 8

This example focuses on consideration of preferred futures. In Design and Technologies, students often consider how designed solutions can respond to problems for individuals and the community.

When these problems involve consideration of harms, benefits or values, then we are in the realm of ethical issues or ethical considerations.

Students consider preferred futures and, when linked to an ethical issue, might consider competing ideas on what is preferred and how often there are different perspectives on the most significant values, harms and benefits.

Assessment

The key to assessment in Ethical Capability is to provide students with the knowledge to be able to discuss and defend their response. For example, you would not be looking to see if students land on a particular stakeholder’s preferred future as being the most preferable one above all others, but rather that no matter which they pick as the most preferable, or how they might compare them as better or worse than each other, they can justify this using knowledge and skills from Ethical Capability (see in particular the [Unpacking the content descriptions](https://www.vcaa.vic.edu.au/curriculum/foundation-10/resources/ethical-capability/Pages/TeachingResources.aspx) teaching resource in the Ethical Capability resources on the VCAA website). Their justification might be supported by evidence, examples, etc. that are utilise knowledge of Design and Technologies.

The following table demonstrates how assessment of Ethical Capability occurs along a learning continuum. Assessment would occur in the context of Design and Technologies.

The underlying content description is in the middle of the table and the relevant aspects of the achievement standards at the top, with some suggested ‘I can’ statements that reflect the achievement standards along the continuum.

|  |  |  |  |
| --- | --- | --- | --- |
| **Ethical Capability achievement standard extract** | Students identify different ethical issues associated with a particular problem. (Levels 5 and 6) | Students … articulate how criteria can be applied to determine the importance of ethical concerns. (Levels 7 and 8) | Students … examine complex issues (and) identify the ethical dimensions … (Levels 9 and 10) |
| **Ethical Capability content description, Levels 7 and 8** | Investigate criteria for determining the relative importance of matters of ethical concern [(VCECU016)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCECU016) |
| **Illustrative ‘I can’ statements** | I can identify ethical issues for different stakeholders. | I can apply criteria to discuss the importance of issues for stakeholders. | I can link the importance of ethical issues, influencing factors and preferred futures. |

Bringing together teaching, learning and assessment

The following table shows how student learning progresses from Levels 5 and 6 to Levels 7 and 8, with planning providing opportunity for students to reach towards Levels 9 and 10.

The targeted content description is an Ethical Capability content description, Levels 7 and 8: Investigate criteria for determining the relative importance of matters of ethical concern [(VCECU016)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCECU016).

|  |  |  |
| --- | --- | --- |
| **What is explicitly taught** | **Alignment to achievement standard extracts** | **Aligned learning activities**Students are provided with the opportunity to: |
| How to identify an ethical issue | Levels 5 and 6: Students are taught how to identify an ethical issue, which supports them to identify ethical issues related to a particular problem. | Undertake short case studies involving a range of ethical issues |
| Reasons why people do or might disagree on their importanceHow to compare different perspectives | Levels 7 and 8: Students are taught underlying reasons for different perspectives and how to compare them, which supports them to understand how to apply criteria to discuss relative importance of ethical concerns. | Participate in design challenges involving a range of issues and a range of different stakeholders with competing preferred futures, creating a dilemma |
| Links between issues, wider factors and preferred futures | Levels 9 and 10: Students are taught connections between issues, wider factors and preferred futures, which will support them to analyse complex issues to identify their ethical dimensions. |

Setting up a case study where there is a dilemma is ideal for getting the most out of Ethical Capability.

For example, coltan mining has several issues regarding poverty, child labour and destroyed habitats. Do we, as designers of electronics, look for a substitute for coltan, which might save habitat of gorillas but take away very poor people’s livelihoods?

Here there is not a clear preferred future that all stakeholders would be happy with – and this is where knowledge from Ethical Capability will help students develop and defend a position, which makes their learning assessable but also enables good rich and thoughtful conversations that will progress student learning.

Design and Technologies and Intercultural Capability

The table below gives an overview of the relationship between Design and Technologies and Intercultural Capability.

|  |  |  |
| --- | --- | --- |
| **Intercultural Capability strands** | Cultural Practices* Characteristics of their own and others’ cultural identities
* How culture shapes perspectives and actions
 | Cultural Diversity* Challenges and opportunities created by cultural diversity
* How cultural diversity shapes and contributes to social cohesion
 |
| **Design and Technologies and Intercultural Capability mutually support students to …** | identify when and how culture can be a consideration influencing design solutions; and analyse the ways intercultural relationships and experiences contribute to the development of design solutions in relevant contexts | understand the challenges and opportunities associated with working on design solutions in an interconnected and culturally diverse world |

Sometimes cultural context will need to be taken into account when creating designed solutions, or the challenges and opportunities created by cultural diversity and maintaining social cohesion might also be relevant.

Intercultural Capability example, Levels 3 and 4

In Design and Technologies, students often consider how designed solutions can respond to problems for individuals and the community, and sometimes these problems have a cultural context.

Design and Technologies also provides opportunities to learn from other cultures, for example, in how they use materials for different purposes. This is an example of an intercultural experience, that is, the coming together of two or more cultures.

In this example the focus is on reflection and respect. Students are not going to be willing to learn from other cultures unless they have a capacity to value intercultural experiences.

Assessment

The following table demonstrates how assessment of Intercultural Capability occurs along a learning continuum. Assessment would occur in the context of Design and Technologies.

The underlying content description is in the middle of the table and the relevant aspects of the achievement standards at the top, with some suggested ‘I can’ statements that reflect the achievement standards along the continuum.

|  |  |  |  |
| --- | --- | --- | --- |
| **Intercultural Capability achievement standard extract** | Students … describe their experiences of intercultural encounters … (Foundation to Level 2) | Students … explain what they have learnt about themselves and others from intercultural experiences. (Levels 3 and 4) | Students … explain how intercultural experiences can influence beliefs and behaviours. (Levels 5 and 6) |
| **Intercultural Capability content description, Levels 3 and 4** | Describe what they have learnt about themselves and others from intercultural experiences including a critical perspective on and respect for their own and others’ cultures [(VCICCB006)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCICCB006) |
| **Illustrative ‘I can’ statements** | I can describe my intercultural experience. | I can explain what I learnt about myself and others from my intercultural experience. | I can explain how my intercultural experience will influence me in the future. |

Bringing together teaching, learning and assessment

The following table shows how student learning progresses from Foundation to Level 2 to Levels 3 and 4, with planning providing opportunity for students to reach towards Levels 5 and 6.

The targeted content description is an Intercultural Capability target content description, Levels 3 and 4: Describe what they have learnt about themselves and others from intercultural experiences including a critical perspective on and respect for their own and others’ cultures [(VCICCB006)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCICCB006).

|  |  |  |
| --- | --- | --- |
| **What is explicitly taught** | **Alignment to achievement standard extracts** | **Aligned learning activities**Students are provided with the opportunity to: |
| Recognising an intercultural experience and what happened and feelings involved | Foundation to Level 2: Students are taught concepts that support them to describe their intercultural experience. | Investigate different uses of materials in products from a given region of the world and reflect |
| Ways to reflect on what can be learnt from intercultural experiences  | Levels 3 and 4: Students are taught ways to reflect on intercultural experiences, which supports them to explain what they have learnt about themselves and others. | Complete design challenges involving application of investigation to create a designed solution, explicitly taking into consideration the intercultural experience |
| How what has been learnt from intercultural experiences can have implications for beliefs and behaviours | Levels 5 and 6: Students are taught to make connections between their learnings and beliefs and behaviours, to support their explanation of how their intercultural experience could (or will) influence them. |

Unpacking this example further, students could, for example, consider the role that some materials play in particular cultures, for example, what bamboo might symbolise in traditional Chinese culture and how this symbolism can influence design.

Does it mean the same thing in Australia?

In Australia, what products represent characteristics like loyalty? (For example, red gum, merino wool.) What about crocodile skin? What does it represent culturally? Strength? Longevity?

What if we were to make a plaque celebrating someone becoming an Australian citizen? What would it be made of? Bamboo? Short examples like this can help students to recognise that some materials might have cultural significance in Australia too.

Transfer to new situations

For a student to be fully capable, they ideally want to realise they have learnt skills in Design and Technologies that have general applications beyond the specific challenge they have been working on. For this to happen, they need to be scaffolded and prompted along the way.

Design and Technologies has a head start as there are quite discrete contexts that do, however, have things in common, for example, design thinking.

When you teach something new in a given context, whether for capabilities or Design and Technologies, you activate prior knowledge to help introduce a new idea. So you might use familiar examples of objects made of a material you want to investigate and through this example introduce discrete knowledge and skills from a capability. This ensures students learn one new substantial thing at a time.

You then move to application of new knowledge and skills to new problems within the same context. In selecting the familiar right at the start you will be thinking of how this will bridge to the challenge you want them to work on in the end. You can provide time for students to reflect here on what they have been learning in general, for example, that breaking big problems down into stages is generally useful.

Then when starting in a brand-new context, you can prompt students to see that breaking down problems into stages is also relevant to this new context – prompt students to make this connection themselves. This might require a bit of coordination between teachers if students are likely to make connections across different design contexts. Of course they might also make connections within the same context, such as food specialisations, but link to a different situation from the specific one studied in class – for example, ‘We might also have to break down a problem into stages when …’ You can also, at the reflection stage, work with them to identify problems and challenges beyond the classroom where their newfound knowledge and skills could be applied.

Image description: A flow chart is used to illustrate ‘Transfer to new situations’.

The outline of the flow chart is:

* Introduce and consolidate – Familiar problems in a particular context
* Apply – New problems in the same context
	+ Far transfer – New context
	+ Far transfer – Application of general understanding
* Bridging – Link the familiar and the new
* Far transfer – Prompt students to connect prior knowledge

Assessment methods

There are a range of assessment methods that could be used, for example:

* observation of student dialogue or behaviour
* challenges involving issues that require creative problem-solving
* reflection and journals, interviews or presentations, in multimedia formats
* stimulus with errors that students must identify and resolve
* experiences, for example, intercultural experiences and reflection
* objects within contexts that can be constructed, analysed and/or discussed.

Reflection could be in the form of posters on conflict resolution or collaboration strategies that work; it need not always be in journal form.

With inquiries or experiments, curveballs can be thrown that require creative problem-solving. Plan for something unexpected to happen when working on a design challenge.

As you gain more experience and see more and more student work, you will begin to build a better understanding of what is a reasonable expectation, that is, the depth or breadth or accuracy of an explanation that is reasonable to expect.

Try to assess over a period of time rather than at a point in time. Remember you do not have to do everything at once.

Recap – What to look for when selecting a capability

It is important that the program provides a level of challenge in the identified capability otherwise it is not worth linking. The kind of challenge will vary depending on the capability or, to put it another way, different challenges suit different capabilities. For example, a challenge on resolving a dilemma might suit Ethical Capability, whereas a technical challenge might suit Critical and Creative Thinking or Personal and Social Capability (how to persist and adapt, for example).

Key questions to guide the selection of a capability are listed below.

**Q. Does it support progress in the linked learning area(s)?**

For example, Design and Technologies has a strong focus on collaboration (Personal and Social Capability).

**Q. Does it support progress in the development of the capability?**

For example, planning for a strong focus on progressing collaboration skills.

**Q. Will it deliver ongoing benefits?**

General considerations include upcoming schooling or tertiary contexts (for example, a senior school requirement for strong collaborations skills); contribution to employability skills (for example, whether collaboration is valued by employers); and lifelong learning.

VCAA resources

There are a range of resources across the capabilities to support classroom teaching and whole-school planning. These can be accessed via the [F–10 Curriculum section](https://www.vcaa.vic.edu.au/curriculum/foundation-10/Pages/default.aspx) of the VCAA website. We are adding to resources gradually so we encourage you to subscribe to [F–10 Curriculum Updates](https://v6.educationapps.vic.gov.au/em/forms/subscribe.php?db=696088&s=449606&a=97403&k=-kPF9VbSpHIS3-dChzIePZWoeWM6HeDBNTWLyI8TX1A).

Most capabilities resources are found in each of the capability sections on the VCAA website, not the Design and Technologies section.

Types of resources vary according to the capability and variously include:

* whole-school planning advice and templates
* curriculum mapping examples and templates
* general advice on teaching and assessment
* resources for unpacking the content descriptions
* annotated external resources
* sample units of work and assessment rubrics
* some resources linking a learning area and the capability.

You can also access digital assessments on the [Insight Assessment Platform](https://www.vcaa.vic.edu.au/assessment/f-10assessment/insight/Pages/index.aspx) for Intercultural Capability and on the VCAA’s [Digital Assessment Library (DAL)](https://www.vcaa.vic.edu.au/assessment/f-10assessment/digital-assessment-library/Pages/Index.aspx) for Critical and Creative Thinking.

Example assessment resource – indicative progress

Support for describing progress between achievement standards (indicative progress) can be found in the Curriculum Area Resources section of the VCAA website, in each of the capability sections under the Assessment Resources tab – for example, the [Indicative Progress resources](https://www.vcaa.vic.edu.au/curriculum/foundation-10/resources/criticalandcreativethinking/assessmentresources/Pages/Indicative-progress.aspx) for Critical and Creative Thinking.

Indicative progress templates and advice are provided for all learning areas and capabilities.

The indicative progress templates include an example of what student work might include but not yet have in order to meet the achievement standard.

For the capabilities, this was constructed through working with volunteer teachers who gave their advice based on looking at student work and the features of it, asking what makes one more sophisticated than another.

You are encouraged to do this in your school.

Formative assessment

The VCAA’s [online formative assessment resources](https://www.vcaa.vic.edu.au/assessment/f-10assessment/Pages/FormativeAssessment.aspx) include a general guide to formative assessment, including videos and text, as well as example rubrics for:

* [Critical and Creative Thinking](https://www.vcaa.vic.edu.au/assessment/f-10assessment/formative-assessment/formative-assessment-rubric-samples/Pages/CriticalandCreativeThinkingSamples.aspx)
* [Personal and Social Capability](https://www.vcaa.vic.edu.au/assessment/f-10assessment/formative-assessment/formative-assessment-rubric-samples/Pages/PersonalSocialCapabilitySamples.aspx)
* [Ethical Capability](https://www.vcaa.vic.edu.au/assessment/f-10assessment/formative-assessment/formative-assessment-rubric-samples/Pages/EthicalCapabilitySamples.aspx).

Example rubrics for Intercultural Capability are included within individual units of work on the [Intercultural Capability teaching resources](https://www.vcaa.vic.edu.au/curriculum/foundation-10/resources/intercultural-capability/Pages/TeachingResources.aspx) webpage.

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