

Critical and Creative Thinking

About Critical and Creative Thinking

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Critical and Creative Thinking

Looking ahead to 2030



OECD 2030 Framework for Education - <http://www.oecd.org/australia/>

Teaching, assessing and learning creative and critical thinking skills in education

Background

There is a growing consensus that formal education should cultivate the creativity and critical thinking skills of students to help them succeed in modern, globalised economies based on knowledge and innovation. However, teachers' (and countries') ability to foster and monitor progress is limited by the lack of understanding of how some of these skills materialise at different development stages. One reason why these competences are not promoted in a systematic way is that education systems have rarely established ways to assess them formally. Another, related reason is that, beyond an agreement on the broad objectives, it is not clear how these skills can be visibly and tangibly articulated by teachers, students and policy makers, especially as part of the curriculum.

With this in mind, the Centre for Educational Research and Innovation (CERI) aims to further develop and refine our understanding of how creative and critical thinking skills can be assessed in an education system.

Learning objectives in primary and secondary education : Brazil, France, Hungary, India, Netherlands, Slovak Republic, Spain, Thailand, United States, and United Kingdom (Wales)

Further education will start in 2018. For more information, please see our [call for participation](#).

and critical thinking skills (when they do so), or some aspects of them.

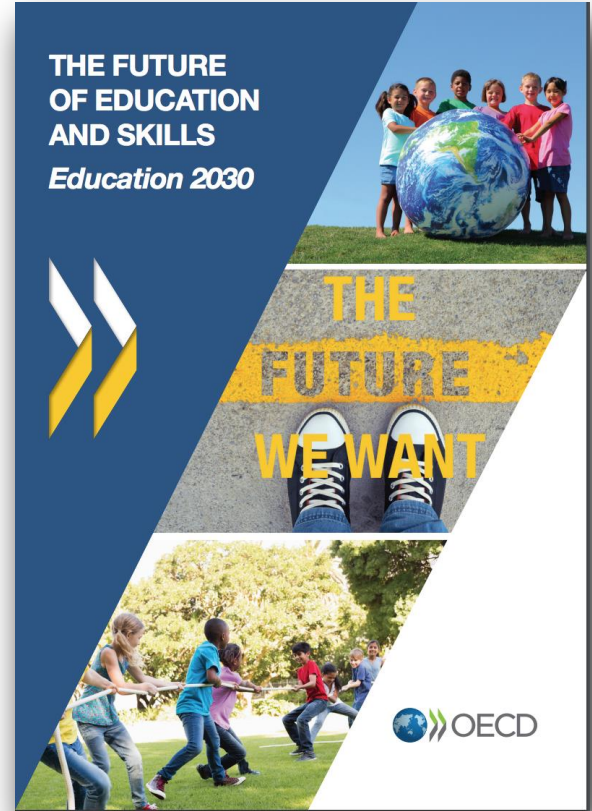
“There is a growing consensus that formal education should cultivate the creativity and critical thinking skills of students to help them succeed in modern, globalised economies based on knowledge and innovation.”

“The future is uncertain and we cannot predict it; but we need to be open and ready for it.

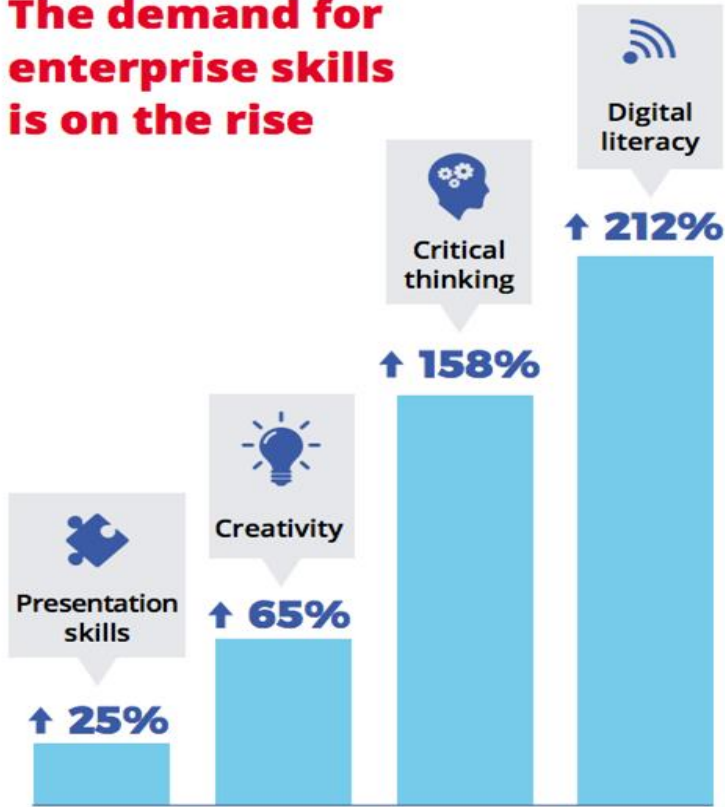
The children entering education in 2018 will be young adults in 2030.

Schools can prepare them for jobs that have not yet been created, for technologies that have not yet been invented, to solve problems that have not yet been anticipated.

It will be a shared responsibility to seize opportunities and find solutions”.



The demand for enterprise skills is on the rise



...as observed in early career job ads over the past 3 years



THE NEW BASICS:

Big data reveals the skills young people need for the New Work Order

FYA's New Work Order
report series

fya

http://www.fya.org.au/wp-content/uploads/2016/04/The-New-Basics_Web_Final.pdf

Recommendation 7

“Strengthen the development of the general capabilities, and raise their status within curriculum delivery, by using learning progressions to support clear and structured approaches to their teaching, assessment, reporting and integration with learning areas.”



Foundation to Level 2
Levels 3 and 4
Levels 5 and 6
Levels 7 and 8
Levels 9 and 10

Questions and Possibilities	Levels 3 and 4	Levels 5 and 6	Levels 7 and 8	Levels 9 and 10
Identify, describe and use different kinds of question stems to gather information and ideas	Construct and use open and closed questions for different purposes	Examine how different kinds of questions can be used to identify and clarify information, ideas and possibilities	Consider how to approach and use questions that have different elements, including factual, temporal and conceptual elements	Investigate the characteristics of effective questions in different contexts to examine information and test possibilities
Consider personal reactions to situations or problems and how these reactions may influence thinking	Explore reactions to a given situation or problem and consider the effect of pre-established preferences	Experiment with alternative ideas and actions by setting preconceptions to one side	Suspend judgements temporarily and consider how preconceptions may limit ideas and alternatives	Suspend judgements to allow new possibilities to emerge and investigate how this can broaden ideas and solutions
Make simple modifications to known ideas and routine solutions to generate some different ideas and possibilities	Investigate different techniques to sort facts and extend known ideas to generate novel and imaginative ideas	Identify and form links and patterns from multiple information sources to generate non-routine ideas and possibilities	Synthesise information from multiple sources and use lateral thinking techniques to draw parallels between known and new solutions and ideas when creating original proposals and artefacts	Challenge previously held assumptions and create new links, proposals and artefacts by investigating ideas that provoke shifts in perspectives and cross boundaries to generate ideas and solutions
Reasoning				
Examine words that show reasons and words that show conclusions	Examine and use the structure of a basic argument, with an aim, reasons and conclusion to present a point of view	Investigate common reasoning errors including contradiction and inconsistency, and the influence of context	Examine common reasoning errors including circular arguments and cause and effect fallacies	Examine a range of rhetorical devices and reasoning errors, including false dichotomies and begging the question
Compare and contrast information and ideas in own and others reasoning	Distinguish between main and peripheral ideas in own and others information and points of view	Consider the importance of giving reasons and evidence and how the strength of these can be evaluated	Investigate the difference between a description, an explanation and a correlation and scepticism about cause and effect	Examine how to identify and analyse suppressed premises and assumptions
Consider how reasons and examples are used to support a point of view and illustrate meaning	Investigate why and when the consequences of a point of view should be considered	Consider when analogies might be used in expressing a point of view and how they should be expressed and evaluated	Investigate when counter examples might be used in expressing a point of view	Investigate the nature and use of counter examples structured as arguments
	Identify and use 'if, then...' and 'what if...' reasoning	Examine the difference between valid and sound arguments and between inductive and deductive reasoning, and their degrees of certainty	Consider how to settle matters of fact and matters of value and the degree of confidence in the conclusions	Consider ambiguity and equivocation and how they affect the strength of arguments
	Explore distinctions when organising and sorting information and ideas from a range of sources	Explore what a criterion is, different kinds of criteria, and how to select appropriate criteria for the purposes of filtering information and ideas	Examine how to select appropriate criteria and how criteria are used in clarifying and challenging arguments and ideas	Investigate use of additional or refined criteria when application of original criteria does not produce a clear conclusion
Meta-Cognition				
Consider ways to express and describe thinking activity, including the expression of feelings about learning, both to others and self	Consider concrete and pictorial models to facilitate thinking, including a range of visualisation strategies	Investigate thinking processes using visual models and language strategies	Consider a range of strategies to represent ideas and explain and justify thinking processes to others	Critically examine their own and others thinking processes and discuss factors that influence thinking, including cognitive biases
Explore some learning strategies, including planning, repetition, rewording, memorisation, and use of mnemonics	Examine an increased range of learning strategies, including visualisation, note-taking, peer instruction and incubation, and reflect on how these can be applied to different tasks to reach a goal	Examine learning strategies, including constructing analogies, visualising ideas, summarising and paraphrasing information and reflect on the application of these strategies in different situations	Examine a range of learning strategies and how to select strategies that best meet the requirements of a task	Investigate how the use of a range of learning strategies can be monitored, evaluated and re-directed as necessary
Investigate ways to problem-solve, using egocentric and experiential language	Investigate a range of problem-solving strategies, including brainstorming, identifying, comparing and selecting options, and developing and testing hypotheses	Investigate how ideas and problems can be disaggregated into smaller elements or ideas, how criteria can be used to identify gaps in existing knowledge, and assess and test ideas and proposals	Consider how problems can be segmented into discrete stages, new knowledge synthesised during problem-solving and criteria used to assess emerging ideas and proposals	Investigate the kind of criteria that can be used to rationally evaluate the quality of ideas and proposals, including the qualities of viability and workability
Achievement Standard				
By the end of Level 2, students use and give examples of different kinds of questions. Students generate ideas that are new to them and make choices after considering personal preferences. Students identify words that indicate components of a point of view. They use reasons and examples for different purposes. Students express and describe thinking activity. They practice some learning strategies. Students demonstrate and articulate some problem-solving approaches.	By the end of Level 4, students explain how to construct open and closed questions and use them for different purposes. Students select and apply techniques to generate a range of ideas that extend how problems are solved. Students describe and structure arguments with clearly identified aims, premises and conclusions. They use and explain a range of strategies to develop their arguments. They identify the need to make distinctions and apply strategies to make these. Students use concrete and pictorial models to facilitate thinking, including a range of visualisation strategies. They practice and apply an increased range of learning strategies, including visualisation, note-taking, peer instruction and incubation. Students select and apply a range of problem-solving strategies.	By the end of Level 6, students apply questioning as a tool to focus or expand thinking. They use appropriate techniques to copy, borrow and compare aspects of existing solutions in order to identify relationships and apply these to new situations. Students distinguish between valid and sound arguments and between deductive and inductive reasoning. They explain how reasons and evidence can be evaluated. They explain and apply basic techniques to construct valid arguments and test the strength of arguments. Students represent thinking processes using visual models and language. They practice and apply learning strategies, including constructing analogies, visualising ideas, summarising and paraphrasing information. Students disaggregate ideas and problems into smaller elements or ideas, develop criteria to assess and test thinking, and identify and seek out new relevant information as required.	By the end of Level 8, students prioritise the elements of a question and justify their selection. Students demonstrate flexibility in thinking by using a range of techniques in order to repurpose existing ideas or solutions to meet needs in new contexts. Students explain different ways to settle matters of fact and matters of value and issues concerned with these. They explain and apply a range of techniques to test the strength of arguments. Students use a range of strategies to represent ideas and explain and justify thinking processes to others. They evaluate the effectiveness of a range of learning strategies and select strategies that best meet the requirements of a task. Students independently segment problems into discrete stages, synthesise new knowledge at intermediate stages during problem-solving and develop and apply criteria to assess ideas, proposals and emerging thinking.	By the end of Level 10, students construct and evaluate questions, including their own, for their effectiveness. They demonstrate a willingness to shift their perspective when generating ideas, resulting in new ways of perceiving solutions. Students structure complex valid arguments. They explain and apply a range of techniques to test validity within and between arguments. Students identify, articulate, analyse and reflect on their own and others thinking processes. They use, monitor, evaluate and redirect as necessary a range of learning strategies. Students develop, justify and refine criteria to evaluate the quality of ideas, proposals and thinking processes.

[Rationale and Aims](#)**Structure**[Learning in Critical and Creative Thinking](#)[Scope and Sequence](#)[Resources](#)[Glossary](#)

Structure

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Critical and Creative Thinking is organised into three interrelated strands: Questions and Possibilities, Reasoning and Meta-Cognition.

Strands	Questions and Possibilities	Reasoning	Meta-Cognition
	Explore the nature of questioning and a range of processes and techniques to develop ideas	Explore how to compose, analyse and evaluate arguments and reasoning	Explore the use of strategies to understand, manage and reflect on thinking and learning processes

Achievement standards

In Critical and Creative Thinking, students progress along a curriculum continuum that provides the first achievement standard at Foundation to Level 2 and then at Levels 4, 6, 8 and 10.

A 'Towards Foundation Levels A to D' curriculum is provided for students with disabilities or additional learning needs in this curriculum area.

Rationale + Aims

Critical and creative thinking capability aims to ensure that students develop:

- understanding of thinking processes and an ability to manage and apply these intentionally
- skills and learning dispositions that support logical, strategic, flexible and adventurous thinking
- confidence in evaluating thinking and thinking processes across a range of familiar and unfamiliar contexts.

Levels 9 and 10

Critical and Creative Thinking

Questions and Possibilities

- Investigate the characteristics of effective questions in different contexts to examine information and test possibilities
- Suspend judgements to allow new possibilities to emerge and investigate how this can broaden ideas and solutions
- Challenge previously held assumptions and create new links, proposals and artefacts by investigating ideas that provoke shifts in perspectives and cross boundaries to generate ideas and solutions

Reasoning

- Examine a range of rhetorical devices and reasoning errors, including false dichotomies and begging the question
- Examine how to identify and analyse suppressed premises and assumptions
- Investigate the nature and use of counter examples structured as arguments
- Consider ambiguity and equivocation and how they affect the strength of arguments
- Investigate use of additional or refined criteria when application of original criteria does not produce a clear conclusion

Meta-Cognition

- Critically examine their own and others thinking processes and discuss factors that influence thinking, including cognitive biases
- Investigate how the use of a range of learning strategies can be monitored, evaluated and re-directed as necessary
- Investigate the kind of criteria that can be used to rationally evaluate the quality of ideas and proposals, including the qualities of viability and workability

Achievement Standard

By the end of Level 10, students construct and evaluate questions, including their own, for their effectiveness. They demonstrate a willingness to shift their perspective when generating ideas, resulting in new ways of perceiving solutions. Students structure complex valid arguments. They explain and apply a range of techniques to test validity within and between arguments. Students identify, articulate, analyse and reflect on their own and others thinking processes. They use, monitor, evaluate and redirect as necessary a range of learning strategies. Students develop, justify and refine criteria to evaluate the quality of ideas, proposals and thinking processes.

Ethical Capability

Understanding Concepts

- Investigate the connections and distinctions between and the relative value of concepts including fairness and equality, and respect and tolerance
- Explore a range of ethical problems and examine the extent to which different positions are related to commonly held ethical concepts and principles, considering the influence of cultural norms, religion, world views and philosophical thought
- Distinguish between the ethical and non-ethical dimensions of complex issues, including the distinction between ethical and legal issues

Decision Making and Actions

- Discuss issues raised by thinking about consequences and duties, in approaches to decision-making and action, and arguments for and against these approaches
- Investigate how different factors involved in ethical decision-making can be managed by people and groups

Achievement Standard

By the end of Level 10, students explain connections and distinctions between ethical concepts, identifying areas of contestability in their meanings and relative value. Students analyse and evaluate contested approaches to thinking about consequences and duties in relation to ethical issues. They examine complex issues, identify the ethical dimensions and analyse commonality and difference between different positions. They explain how different factors involved in ethical decision-making can be managed.

Intercultural Capability

Cultural Practices

- Analyse the complex and dynamic interrelationships between and within cultures in a range of contexts and the impact of these interrelationships on their own and others cultural practices
- Analyse the ways in which intercultural relationships and experiences have contributed to the development of attitudes, beliefs and behaviours, and how they are manifested in various contexts

Cultural Diversity

- Identify and analyse the challenges and benefits of living and working in an interconnected and culturally diverse world
- Analyse the components of a cohesive society, and the challenges, benefits and consequences of maintaining or failing to maintain that cohesion

Achievement Standard

By the end of Level 10, students critically analyse the complex and dynamic interrelationship between and within cultures and the challenges and benefits of living in an interconnected and culturally diverse world. They evaluate how intercultural relationships and experiences influence attitudes, beliefs and behaviours in different contexts. Students analyse the components of a cohesive society, and the challenges benefits and consequences of maintaining or failing to maintain that cohesion.

Personal and Social Capability

Self-Awareness and Management

Recognition and expression of emotions

- Evaluate emotional responses and the management of emotions in a range of contexts

Development of resilience

- Develop criteria to appraise personal qualities and use these to design strategies to plan for the future or address a challenge
- Analyse the significance of independence and individual responsibility in the completion of challenging tasks
- Evaluate behaviours and protective factors that contribute to the development of confidence, adaptability and self-reflection

Social Awareness and Management

Relationships and diversity

- Analyse how divergent values and beliefs contribute to different perspectives on social issues
- Acknowledge the importance of empathy and the acceptance of diversity for a cohesive community and reflect on the effectiveness of strategies for being respectful of diversity and human rights
- Investigate personal, social and cultural factors that influence the ability to experience positive and respectful relationships and explore the rights and responsibilities of individuals in relationships

Collaboration

- Evaluate own and others contribution to group tasks, critiquing roles including leadership and provide useful feedback to peers, evaluate task achievement and make recommendations for improvements in relation to team goals
- Develop specific skills and a variety of strategies to prevent or resolve conflict, and explore the nature of conflict resolution in a range of contexts

Achievement Standard

By the end of Level 10, students reflect critically on their emotional responses to challenging situations in a wide range of contexts. They demonstrate persistence, motivation, initiative and decision-making through completion of challenging tasks. They evaluate personal characteristics, strategies and sources of support used to cope with stressful situations/life challenges. Students analyse the effects of actions that repress human rights and limit the expression of diverse views. They analyse factors that influence different types of relationships. They critique their ability to devise and enact strategies for working in diverse teams, drawing on the skills and contributions of team members to complete complex tasks. They develop and apply criteria to evaluate the outcomes of group tasks and make recommendations for improvements. They generate, apply and evaluate strategies to prevent and resolve conflicts in a range of contexts.

Critical and Creative Thinking

Introduction

Curriculum

Rationale and Aims

Structure

Learning in Critical and Creative Thinking

Scope and Sequence

Resources

Glossary

Resources

[Print this page](#)

A range of resources to assist with implementing the Victorian Curriculum F – 10 are available. Please visit the following websites to access these resources (links open in a new window):

- [Victorian Curriculum F – 10 Resources and Support \(VCAA\)](#)

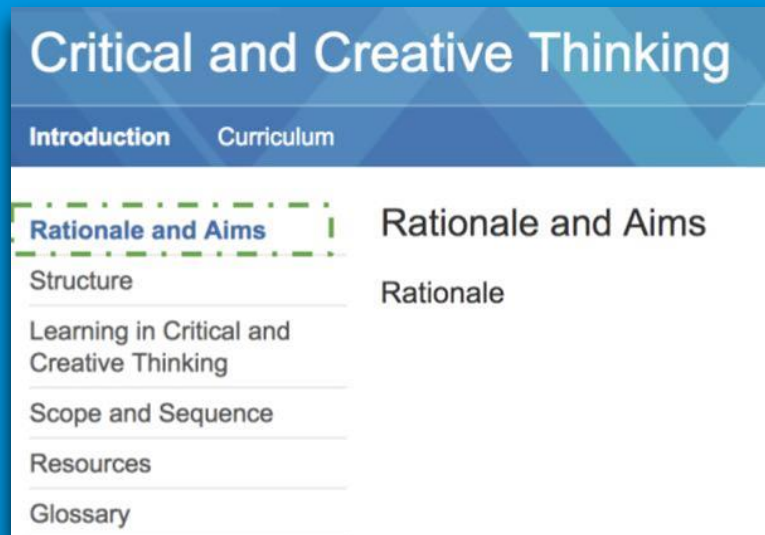
Includes general advice and information regarding the Victorian Curriculum F – 10, FAQs, professional learning opportunities and curriculum specific advice, with PowerPoints and links to external resources.

- [Curriculum Planning Resource \(VCAA\)](#)

This website provides a range of resources to support planning and documenting a comprehensive school-wide curriculum.

Recommended Actions

For further exploration of why CCT is important we recommend reading:



The image shows a screenshot of a website's navigation menu for 'Critical and Creative Thinking'. The menu is organized into two columns. The left column lists various sections, with 'Rationale and Aims' highlighted by a dashed green border. The right column shows the corresponding content for the selected section.

Critical and Creative Thinking	
Introduction	Curriculum
Rationale and Aims	Rationale and Aims
Structure	Rationale
Learning in Critical and Creative Thinking	
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