

Thinking Processes

In Thinking Processes, standards for assessing and reporting on student achievement are introduced at Level 3. The learning focus statements for Levels 1 and 2 provide advice about learning experiences that will assist students to work towards the achievement of the standards at Level 3.

Thinking Processes – Progressing towards Level 3

Progression Point 2.25

At 2.25, the work of a student progressing towards the standard at Level 3 demonstrates, for example:

Reasoning, processing and inquiry

- collection of information to answer their teachers' questions
- use of simple thinking strategies, as modelled by the teacher, to sort information; for example, using a sunshine wheel to brainstorm ideas
- understanding that there are many factors involved in thinking through issues

Creativity

- development of questions about creative possibilities within familiar contexts

Progression Point 2.5

At 2.5, the work of a student progressing towards the standard at Level 3 demonstrates, for example:

Reasoning, processing and inquiry

- consideration about where to begin to collect information to answer their own questions
- awareness of the difference between fiction and non-fiction sources
- use of simple thinking strategies for organising information and concepts; for example, using a simple concept map
- understanding of a sequence of events

Creativity

- exploration of creative ideas using open-ended questions about familiar contexts; for example, asking why and how an event happened and what might or could have happened

Progression Point 2.75

At 2.75, the work of a student progressing towards the standard at Level 3 demonstrates, for example:

Reasoning, processing and inquiry

- with teacher guidance, collection of information from a range of sources to answer their own and others' questions
- awareness of authorship of information sources; for example, who wrote the information and what is their background
- identification of the steps involved in solving a problem

Creativity

- generation of creative possibilities around a topic; for example, contributing ideas about different aspects for investigation in a topic
- use of responses to questions as information for further inquiry

Progression Point 2.25

At 2.25, the work of a student progressing towards the standard at Level 3 demonstrates, for example:

Reflection, evaluation and metacognition

- when prompted, awareness of their thinking strategies
- when prompted, articulation of what they are thinking

Progression Point 2.5

At 2.5, the work of a student progressing towards the standard at Level 3 demonstrates, for example:

Reflection, evaluation and metacognition

- understanding of the thinking strategies they use in different curriculum contexts
- understanding and communication of how they arrive at their thinking

Progression Point 2.75

At 2.75, the work of a student progressing towards the standard at Level 3 demonstrates, for example:

Reflection, evaluation and metacognition

- independent selection of appropriate thinking strategies for organising their ideas
- identification and examples of the differences between their prior and current thinking, using suitable language

Thinking Processes – Level 3**Reasoning, processing and inquiry**

At Level 3, students collect information from a range of sources to answer their own and others' questions. They question the validity of sources when appropriate. They apply thinking strategies to organise information and concepts in a variety of contexts, including problem solving activities. They provide reasons for their conclusions.

Creativity

At Level 3, students apply creative ideas in practical ways and test the possibilities of ideas they generate. They use open-ended questioning and integrate available information to explore ideas.

Reflection, evaluation and metacognition

At Level 3, students identify strategies they use to organise their ideas, and use appropriate language to explain their thinking. They identify and provide reasons for their point of view, and justify changes in their thinking.

Thinking Processes – Progressing towards Level 4
Progression Point 3.25

At 3.25, the work of a student progressing towards the standard at Level 4 demonstrates, for example:

Reasoning, processing and inquiry

- with teacher guidance, development of simple questions for a whole-class or group investigation or response
- collection of information for an investigation, report or response, and consideration of its worth or relevance
- awareness of the differences between fact and opinion
- organisation of collected information around ideas and concepts for practical application; for example, using a simple graphic organiser to sort information
- use of organised information for problem solving and decision making in an investigation
- with teacher guidance, development of an argument on a given topic

Creativity

- identification of possible ideas (new as well as those already tried) and solutions in familiar contexts including, with teacher support, development of selection criteria such as safety and relevance

Progression Point 3.5

At 3.5, the work of a student progressing towards the standard at Level 4 demonstrates, for example:

Reasoning, processing and inquiry

- with peers, development and evaluation of key questions for an investigation or response
- identification of useful and irrelevant or useless information or key words when collecting information for an investigation, report or response
- identification, with teacher support, of facts and opinions related to an investigation on a given topic
- development of conceptual knowledge through the organisation of information collected for an investigation, and its use in assisting problem solving and decision making
- provision of supporting evidence in the development of arguments on a given topic

Creativity

- generation of multiple possibilities/responses using creative thinking in a variety of contexts

Progression Point 3.75

At 3.75, the work of a student progressing towards the standard at Level 4 demonstrates, for example:

Reasoning, processing and inquiry

- with teacher support, formulation of appropriate key questions for their investigations or responses
- evaluation of the usefulness of information collected for investigations, reports or responses
- with teacher support, discrimination between fact and opinion and the sources used in investigations, reports and responses
- with teacher support, consideration of various factors in the development of arguments on a given topic

Creativity

- use of creative thinking strategies such as questioning, brainstorming and mind mapping to solve problems in a variety of contexts
- identification and explanation of how their self-generated ideas could be applied

Progression Point 3.25

At 3.25, the work of a student progressing towards the standard at Level 4 demonstrates, for example:

Reflection, evaluation and metacognition

- with teacher guidance, reflection on the effectiveness of a range of thinking processes and tools in particular contexts
- awareness of how their ideas and understandings have changed, and use of examples in simple explanations

Progression Point 3.5

At 3.5, the work of a student progressing towards the standard at Level 4 demonstrates, for example:

Reflection, evaluation and metacognition

- with teacher prompting and support, evaluation of the effectiveness of their thinking processes and tools
- use of appropriate terminology when articulating their thinking processes
- systematic recording of changes in their thinking and understandings

Progression Point 3.75

At 3.75, the work of a student progressing towards the standard at Level 4 demonstrates, for example:

Reflection, evaluation and metacognition

- independent reflection on, and evaluation of, the effectiveness of their thinking processes and tools
- use of appropriate terminology and provision of suitable examples when articulating their thinking processes
- identification and documentation of how and why their ideas, understandings and beliefs have changed over time

Thinking Processes – Level 4

Reasoning, processing and inquiry

At Level 4, students develop their own questions for investigation, collect relevant information from a range of sources and make judgments about its worth. They distinguish between fact and opinion. They use the information they collect to develop concepts, solve problems or inform decision making. They develop reasoned arguments using supporting evidence.

Creativity

At Level 4, students use creative thinking strategies to generate imaginative solutions when solving problems. They demonstrate creativity in their thinking in a range of contexts and test the possibilities of concrete and abstract ideas generated by themselves and others.

Reflection, evaluation and metacognition

At Level 4, students use a broad range of thinking processes and tools, and reflect on and evaluate their effectiveness. They articulate their thinking processes. They document changes in their ideas and beliefs over time.

Thinking Processes – Progressing towards Level 5
Progression Point 4.25

At 4.25, the work of a student progressing towards the standard at Level 5 demonstrates, for example:

Reasoning, processing and inquiry

- with teacher guidance and using a range of strategies and self-formulated questions, identification of information that would be appropriate for an investigation, analysis or report
- with teacher direction and peer support, application of methodologies; for example, in an investigation, analysis or report
- problem solving and decision making in activities which involve a few variables

Creativity

- with teacher guidance, use of a range of creative thinking strategies for exploring possibilities and responding appropriately to a challenge

Reflection, evaluation and metacognition

- awareness of the purpose of thinking tools in different applications such as brainstorming and analysis
- teacher-prompted articulation of their thinking processes during investigations
- teacher-directed evaluation of their thinking strategies

Progression Point 4.5

At 4.5, the work of a student progressing towards the standard at Level 5 demonstrates, for example:

Reasoning, processing and inquiry

- identification and synthesis of relevant information from given sources, using appropriate strategies to evaluate evidence; for example, identifying subjective or misleading information
- application of teacher-selected methodologies in a curriculum context
- completion of activities focusing on problem solving and decision making which involve a few variables

Creativity

- with teacher guidance, generation of multiple options and solutions or responses to problems or issues; for example, by adapting and adding ideas

Reflection, evaluation and metacognition

- identification of a range of thinking tools and their intended purposes in different applications
- teacher-supported reflection on their thinking processes; for example, in problem solving or research
- with guidance, evaluation of their thinking strategies; for example, using a reflection sheet or discussion with peers

Progression Point 4.75

At 4.75, the work of a student progressing towards the standard at Level 5 demonstrates, for example:

Reasoning, processing and inquiry

- use of self-generated selection criteria to locate and critically assess information from varied sources for investigative purposes
- application of a range of appropriate strategies when reasoning
- independent use of a methodology in a curriculum context
- completion of activities focusing on problem solving and decision making which involve variables and other possible solutions

Creativity

- with teacher support, application of creative thinking strategies for a variety of purposes and problems, and in a range of contexts

Reflection, evaluation and metacognition

- appropriate use, in a variety of contexts, of a range of thinking tools and strategies
- description of and reflection on their thinking and their thinking processes in different contexts
- evaluation and justified modification of their thinking strategies during investigations

Thinking Processes – Level 5

Reasoning, processing and inquiry

At Level 5, students use a range of question types, and locate and select relevant information from varied sources when undertaking investigations. When identifying and synthesising relevant information, they use a range of appropriate strategies of reasoning and analysis to evaluate evidence and consider their own and others' points of view. They use a range of discipline-based methodologies. They complete activities focusing on problem solving and decision making which involve an increasing number of variables and solutions.

Creativity

At Level 5, students apply creative thinking strategies to explore possibilities and generate multiple options, problem definitions and solutions. They demonstrate creativity, in the ways they engage with and explore ideas in a range of contexts.

Reflection, evaluation and metacognition

At Level 5, students explain the purpose of a range of thinking tools and use them in appropriate contexts. They use specific language to describe their thinking and reflect on their thinking processes during their investigations. They modify and evaluate their thinking strategies. They describe and explain changes that may occur in their ideas and beliefs over time.

Thinking Processes – Progressing towards Level 6
Progression Point 5.25

At 5.25, the work of a student progressing towards the standard at Level 6 demonstrates, for example:

Reasoning, processing and inquiry

- using teacher-provided structures, application of information from a variety of sources in different forms
- with teacher support, employment of appropriate methodologies for checking knowledge; for example, using surveys, data searches and primary and secondary sources
- generation of appropriate questions for exploring and analysing differing perspectives on an issue

Creativity

- willingness to take risks with innovative possibilities when undertaking set tasks
- use of a variety of creative thinking strategies, such as mind mapping, analogy and questioning of assumptions, to deepen understanding

Progression Point 5.5

At 5.5, the work of a student progressing towards the standard at Level 6 demonstrates, for example:

Reasoning, processing and inquiry

- selection of information from a variety of sources; for example, modifying research questions, connecting information to form new ideas
- use of information-processing skills in problem-solving activities that involve many variables; for example, interpreting data to draw valid conclusions
- use, in various curriculum contexts, of appropriate methodologies for verifying knowledge; for example, application of scientific methodology
- synthesis of information when considering various perspectives

Creativity

- use of a range of self-selected creative thinking strategies when engaging with complex and novel ideas

Progression Point 5.75

At 5.75, the work of a student progressing towards the standard at Level 6 demonstrates, for example:

Reasoning, processing and inquiry

- application of information from a variety of sources and in different forms
- use of information-processing skills in problem-solving activities that involve many variables and possible solutions; for example, analysing data to draw valid conclusions and/or make predictions
- use of appropriate methodologies for verifying and creating knowledge across the curriculum
- processing and synthesis of complex information in problem-solving tasks, and consideration of various perspectives/positions and variables in making decisions

Creativity

- use of creative thinking strategies to address ambiguity and contentiousness in their own and others' ideas

Progression Point 5.25

At 5.25, the work of a student progressing towards the standard at Level 6 demonstrates, for example:

Reflection, evaluation and metacognition

- consideration of their thinking processes and tool selection, and of any changes in their thinking, when reviewing information
- analysis of similar and alternative viewpoints on information or an issue

Progression Point 5.5

At 5.5, the work of a student progressing towards the standard at Level 6 demonstrates, for example:

Reflection, evaluation and metacognition

- justification of their thinking processes and tools, and analysis of changes in their thinking when reviewing information and their own ideas and beliefs
- awareness of the different methodologies used across the domains to create and verify knowledge
- understanding of their own and others' viewpoints following analysis of those perspectives

Progression Point 5.75

At 5.75, the work of a student progressing towards the standard at Level 6 demonstrates, for example:

Reflection, evaluation and metacognition

- understanding of conscious changes that have occurred in their own and/or others' thinking, and of their own and alternative viewpoints and perceptions
- discrimination in weighing up the relative advantages and disadvantages of particular thinking processes and tools for particular tasks

Thinking Processes – Level 6

Reasoning, processing and inquiry

At Level 6, students discriminate in the way they use a variety of sources. They generate questions that explore perspectives. They process and synthesise complex information and complete activities focusing on problem solving and decision making which involve a wide range and complexity of variables and solutions. They employ appropriate methodologies for creating and verifying knowledge in different disciplines. They make informed decisions based on their analysis of various perspectives and, sometimes contradictory, information.

Creativity

At Level 6, students experiment with innovative possibilities within the parameters of a task. They take calculated risks when defining tasks and generating solutions. They apply selectively a range of creative thinking strategies to broaden their knowledge and engage with contentious, ambiguous, novel and complex ideas.

Reflection, evaluation and metacognition

At Level 6, when reviewing information and refining ideas and beliefs, students explain conscious changes that may occur in their own and others' thinking and analyse alternative perspectives and perceptions. They explain the different methodologies used by different disciplines to create and verify knowledge. They use specific terms to discuss their thinking, select and use thinking processes and tools appropriate to particular tasks, and evaluate their effectiveness.

Thinking Processes – Progressing beyond Level 6
Progression Point 6.25

At 6.25, the work of a student progressing beyond the standard at Level 6 demonstrates, for example:

Reasoning, processing and inquiry

- development and refinement of questions to suit purpose and context
- processing of complex data and information which builds on prior knowledge and systematic checking of details to verify or refute understandings

Creativity

- use of a range of creative thinking strategies such as questioning to deepen understanding of domain-specific concepts

Reflection, evaluation and metacognition

- use of a range of thinking processes and tools, specialised vocabulary, and strategies to create and verify knowledge and to enhance understandings

Progression Point 6.5

At 6.5, the work of a student progressing beyond the standard at Level 6 demonstrates, for example:

Reasoning, processing and inquiry

- understanding that questions can be formed to include or omit particular perspectives
- consideration of different perspectives, and explanation of how inconsistencies in these perspectives could contribute to poor decision making

Creativity

- use of a broad range of creative thinking strategies to identify and test key assumptions in concepts and issues

Reflection, evaluation and metacognition

- different thinking processes, specialised vocabulary, strategies and methodologies to create and verify facts, transfer knowledge and understandings from one context to another

Progression Point 6.75

At 6.75, the work of a student progressing beyond the standard at Level 6 demonstrates, for example:

Reasoning, processing and inquiry

- justification for the use or rejection of selected strategies and information sources, including consideration of their relevance and appropriateness
- synthesis of ideas from a range of perspectives, and consideration of how these perspectives might influence their thinking in decision-making

Creativity

- use of a variety of creative thinking strategies to explore problematic aspects of knowledge, including its sometimes relative nature and the appropriateness of its application in different situations

Reflection, evaluation and metacognition

- analysis of how an awareness of their own thinking has helped them to modify knowledge and understanding in different contexts, including consideration of different thinking processes, specialised vocabulary, strategies and methodologies