Inquiry Appendix

This appendix summarises each aspect of critical inquiry to reflect content from different critical thinking frameworks on the internet. The aspects are grouped to show relationships to the science capabilities that were developed before this current work was undertaken.

Aspects of critical inquiry related to gathering and interpreting data/ seeking information/asking questions

Students might be using their knowledge and skills to:

- Shape critical questions pertinent to an issue or puzzle
- Find information and justify the selection of the source
- Identify information that is relevant to the question or argument (and recognise instances when information is deliberately distracting or biased)
- Compare similarities and differences in ideas
- Understand information and convey that understanding to others in their own words
- Look beyond the face value of a situation or argument to ask critical questions about the stated argument or position being taken
- Ask questions to check the accuracy of claims.
- Making and justifying inferences

Knowledge and skills from the various learning areas are integral to making and justifying inferences. Students show they can make and justify inferences when they:

- Distinguish between an observation and an inference (what they observe and what they think these observations mean)
- Combine previous experience and new observations to explain inferences
- Connect different representations to arrive at the key idea being conveyed
- Describe how existing ideas influence new observations and inferences
- Outline how inferences can be tested via ongoing inquiries.

Weaving a coherent curriculum | How the idea of ‘capabilities’ can help Aspects of critical inquiry related to using evidence to support ideas

Evidence-based reasoning

Learning to justify arguments with recourse to evidence has now become a common focus for learning in a range of learning areas. Critical thinking frameworks that emphasise disciplinary processes for knowledge building, or those that address ‘citizenship’ skills (such as those needed for thinking through controversial issues) tend to emphasise the aspects listed here:

- Describe the evidence that supports a case
- Look for counter-evidence with an open mind
- Identify when evidence is missing, incomplete, or inconclusive
- Distinguish between evidence and conclusions
- Weigh conflicting evidence to justify a conclusion
- Change views when evidence points to the need to do so (again, being open-minded).

Being logical
Working with evidence demands logical reasoning, which is variously described as encompassing being able to:

- Break an argument into parts
- Draw logical conclusions from those parts
- Recognise fallacious reasoning (for example, noticing that the argument is not logically developed or
- The person putting the argument has jumped to a conclusion based on too small a sample)
- Identify ‘gaps’ where part of an argument has been left out
- Avoid tautologies (circular arguments)
- Recognise logical inconsistencies (for example, when reasoning points in different directions).

Aspects of critical inquiry related to critique of evidence
In addition to the need for critique implied in some of the above aspects, we found another cluster with a distinct set of metacognitive characteristics (that is, they demand critical thinking about thinking).

Identifying assumptions
Students who can name and explain assumptions might show they can do one or more of the following:

- Detect vagueness or ambiguity in an argument
- Recognise instances when bias or personal prejudice (their own or other people’s) influence thinking
- Be aware of the thinking they are doing (including their own assumptions)
- Evaluate strengths and shortcomings of their own thinking
- Clarify the values that underpin different positions.