# Measuring student success skills

A review of the literature on critical thinking

Educational philosophers, ranging from Plato and Socrates to John Dewey, have emphasized the significance of critical thinking, a skill vital for evaluating information and making informed judgements in both personal and civic life. Critical thinking is essential for inquiry, as it underpins the ability to investigate claims and evaluate evidence. In a rapidly evolving technological landscape, critical thinking becomes increasingly crucial for individuals to effectively navigate complex digital environments and to assess the credibility of online information. These skills are essential in forming a society that can make informed decisions and adapt responsibly to technological advancements.
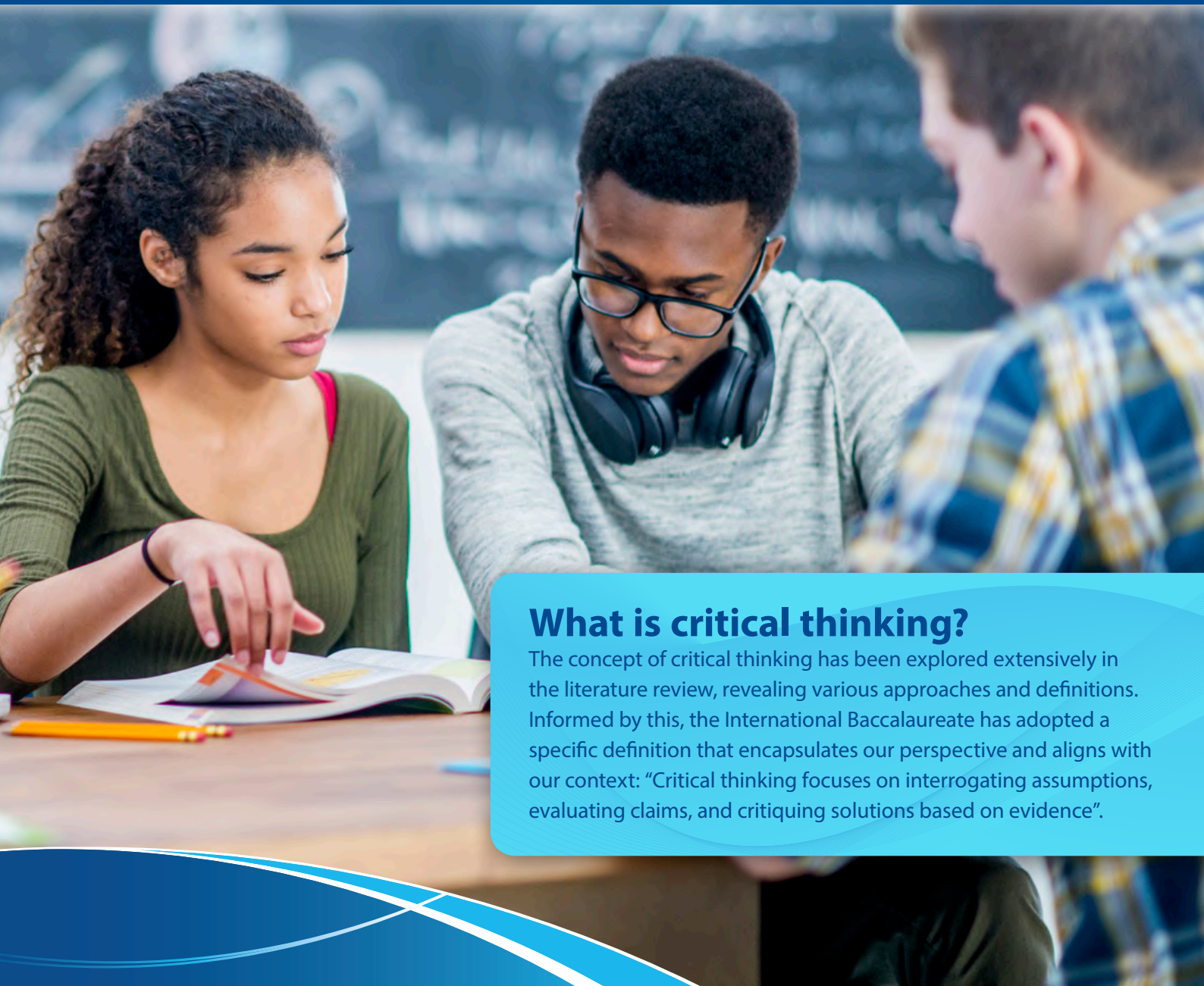
What is critical thinking?

The concept of critical thinking has been explored extensively in the literature review, revealing various approaches and definitions. Informed by this, the International Baccalaureate has adopted a specific definition that encapsulates our perspective and aligns with our context: "Critical thinking focuses on interrogating assumptions, evaluating claims, and critiquing solutions based on evidence".

Is critical thinking generic or domain specific?

While there is a debate about whether critical thinking is a domain-specific or generic skill, the predominant view is that it is primarily domain specific. This is because different domains have their own unique standards and methods for evaluating evidence. For example, the way evidence is assessed and interpreted in history differs from the approaches used in mathematics or the sciences. This perspective suggests that although some critical thinking skills may be applicable across various disciplines, the fundamental aspects are closely linked with the standards and methods of each field.

How do students develop critical thinking over time?

There is limited understanding of how critical thinking skills and dispositions develop in students. Furthermore, there are no widely accepted and validated learning progressions. It is noteworthy that young children can develop critical thinking skills very early in their education, yet, paradoxically, not all adults consistently employ critical thinking when it is called for.

How is critical thinking influenced by culture?

The review of the literature did not address the question of how critical thinking is influenced by culture and remains an open question for future research.

What does the research say about effective critical thinking instructional strategies?

Explicit instruction is most effective for developing critical thinking skills, especially when it is applied within distinct subject areas. This method proves more effective than approaches such as implicit immersion in project-based work or transversal methods. Teachers can foster critical thinking by creating opportunities for students to tackle real-world problems with multiple solutions, facilitating structured responses to open-ended questions, and offering diverse learning activities that encourage students to engage with and solve authentic problems.

How can critical thinking be measured and assessed?

The primary assessment tools for critical thinking are standardized tests and high-quality performance-based assessments. Standardized tests face criticism due to weaknesses related to, for example, construct underrepresentation, which occurs when a measurement does not encompass all aspects of the specific concept it is intended to measure.

High-quality performance-based assessments involve students applying their knowledge and skills in new situations, often by creating something (for example, a report, product or experiment) that is judged against detailed criteria in a rubric. This methodology is effective at collecting evidence pertaining to students' abilities in critical thinking. However, while several critical thinking rubrics exist, none have been formally validated and therefore should be used cautiously.