

Executive Summary

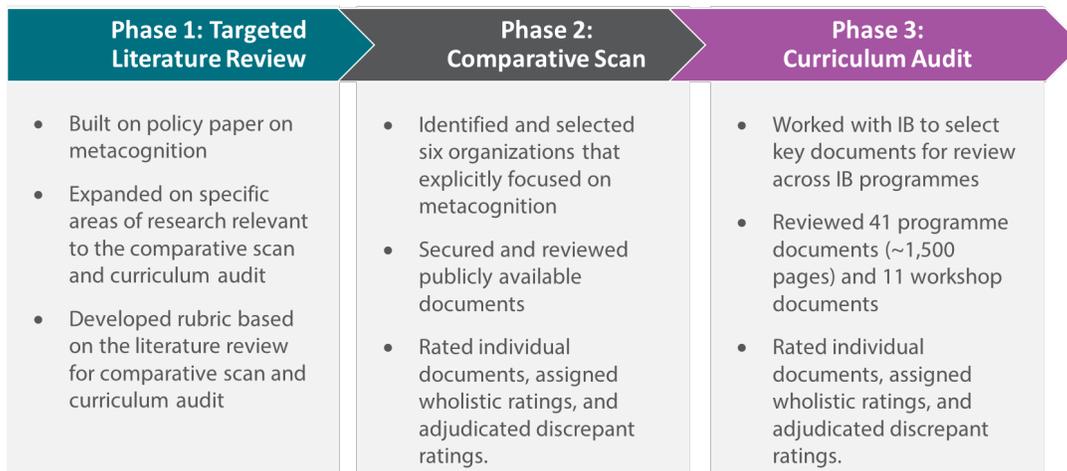
Metacognitive Skills in IB Curricula

In August 2020, the International Baccalaureate (IB) contracted with Inflexion to investigate how metacognitive skills are addressed and supported within and across IB programmes. This study expanded on the thematic [policy paper on metacognition](#) (Beach et al., 2020) to target key aspects of the metacognitive literature, compared the incorporation of metacognitive skills across selected organizations similar to the IB, and examined the extent to which IB curricula reflected current research and policy considerations on the incorporation of metacognitive skills in the curricula. This study addressed the following four overarching research questions:

1. What does the international literature suggest about the effectiveness of metacognition approaches and practices in educational programmes?
2. What effective evidence-based policies, models and best/promising practices exist at the global level to address/promote/integrate metacognition in education?
3. How does IB's approach to metacognitive skills and teaching strategies compare with extant research and best practice at the global level?
4. What are the policy and practice implications of the collective findings about approaches to metacognition from the literature review and curriculum audit for IB?

Methodological Approach

Inflexion researchers employed a sequential, multiphase mixed methods design with three distinct phases. In Phase 1, we expanded the recent literature review on metacognition conducted by Inflexion for a prior IB project (Beach et al., 2020), explicitly targeting key areas of research for more in-depth exploration. In Phase 2, we conducted a comparative scan that analyzed the approaches to fostering students' metacognitive capabilities of programmes similar in design to IB against each other and against a set of evidence-based principles from the literature. In this executive summary, the names of the other educational programmes have been anonymized, as it was not within the project's scope to analyze all curricular documents these organizations might have had, and therefore the findings may not be representative. In Phase 3, we conducted a curriculum audit to explore the extent to which IB programmes address metacognition. Taken together, the data from all three phases were used to develop policy and practice recommendations for IB stakeholders.

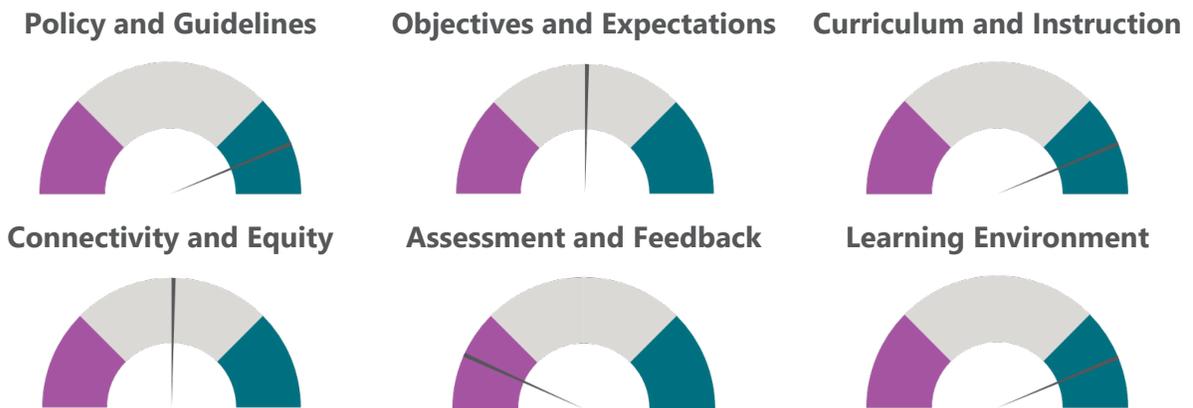


Phase 1: Literature Review Key Findings

- Metacognition is defined as one's awareness or analysis of one's own learning or thinking processes. It is generally considered to encompass two components: knowledge of cognition and regulation of cognition.
- Most research on metacognition focuses on small-scale interventions. Less research focuses on the integration of metacognition into complex educational programmes.
- Students benefit from metacognitive instruction and teachers can be trained to provide such instruction. Metacognitive instruction should be integrative, focusing on different aspects of metacognition simultaneously (i.e., knowledge of cognition and regulation of cognition) while also attending to the learning environment and students' motivations and emotions.
- Integrating metacognition into a complex educational system is a challenging task that few systems have undertaken. Developing a detailed strategic plan for integrating metacognition and allowing for ongoing modification and periods of reflection will be necessary for continuous improvement.
- Metacognition appears at an early age with a marked increase in ability between early childhood and adolescence and continues to grow into adulthood. However, like all skill development, efforts to promote metacognition should look different across grade levels.
- Research suggests certain factors make some metacognition interventions more effective than others, such as duration, explicitness of metacognition, and combining metacognitive knowledge instruction with learning strategy training.

Overall IB Performance

- IB performed moderately well compared to best practices in the literature (i.e., absolute comparisons) and when compared to exemplar programmes in the field (i.e., relative comparisons).
- IB performed best on the policy and guidelines, curriculum and instruction, and learning environment standards. IB's rating on the assessment and feedback standard is an area for improvement.



Phase 2: Comparative Scan Key Findings

- Most programmes performed well on the policy and guidelines, objectives and expectations, and curriculum and instruction standards. All programmes consistently performed lower on the connectivity and equity standard and assessment and feedback standard.
- Across all non-IB programmes, the European national education system and international education programme performed best, and the US-based career and technical education framework performed the worst against the rubric and compared to other programmes.
- Examples from the Asian national education system documents could be used to explore elevating metacognition in the learner attributes, as this is one area where the programme excels, and IB's learner attributes are somewhat similar to the programme's core competencies.

Phase 3: Curriculum Audit Key Findings

- When examining the ratings across programmes, PYP had the most comprehensive coverage of metacognition in their programme documents. The PYP excelled in standards related to policy and guidelines, objectives and expectations, curriculum and

instruction, learning environment, and IB-specific standards. MYP and DP/CP also scored moderately well on the standards related to policy and guidelines and excelled in the connectivity and equity standard. The DP/CP also excelled in the assessment and feedback standard.

Limitations

- The literature review was focused solely on key areas of the metacognitive literature that were pertinent to the comparative scan and curriculum audit. Thus, there is likely further evidence provided in the metacognition literature base that is not covered in this report.
- Absolute ratings on the rubric stem from best practices in the literature. Generally, we would not expect many programmes to score in the higher range of the rubric scale. Rather, this represents ideal implementation and integration of metacognition and something programmes should strive to achieve if metacognition is an explicit priority.
- The comparative scan focused on organizations that were identified as having an explicit emphasis on metacognition. While this was important for ensuring that the programmes were relevant for standards that we were rating, targeting these types of programmes may have indirectly advantaged the comparative programmes.
- Inflexion staff were only able to review and rate a small number of IB documents compared to the pool of potential IB documents. While we prioritized the documents that we expected to contain the most comprehensive coverage and exemplars of metacognition in the IB programmes, we may not have captured the most relevant documents.
- The comparative scan and curricular audit focused on breadth of integration of metacognition rather than depth. Similarly, rubric ratings prioritized explicit mentions of metacognition over implicit metacognition, regardless of the depth of description.

Recommendations

Target other exemplars and model programmes from which to learn: Programme documents from the European national education system and international education programme could be explored as exemplars to help IB strengthen its integration of metacognition across the curriculum. Additionally, the Asian national education system documents could model how to elevate metacognition in the learner attributes, as this is one area where this programme excels, and the learner attributes are similar to the programme's core competencies. Further, IB could learn from its own programmes that are excelling in incorporating metacognition in the curriculum and seek to extend those practices across other programmes.

Be more explicit: Some existing guidance may be updated to make mentions of metacognition more explicit, comprehensive, and clear. Although the programmes included in the comparative scan generally included explicit mentions of metacognition in at least one document, there were very few places where metacognition was explained in a comprehensive manner. For example, there were only a couple mentions of the differences between metacognitive knowledge (i.e., knowledge of cognition) and metacognitive learning strategies (i.e., regulation of cognition) throughout all of the reviewed documents. We believe becoming more explicit and clearer in descriptions and definitions of metacognition will support educators and help IB staff to recognize gaps.

Develop metacognition infrastructure: IB should consider creating workshops, professional learning materials, and resources specifically focused on metacognition and its integration into curricula and teaching practices. This will communicate metacognition as a priority and provide the tools teachers need to intentionally integrate metacognition into their classrooms. Educator resources should include an overview of how metacognition fits into IB curricula, guidance on assessing metacognitive skills, and learning progressions; for example, similar to what is done in Inflexion’s Essential Skills and Dispositions developmental frameworks. Furthermore, this infrastructure should be specific, actionable, and relevant to educators in various IB contexts. Like all curricula, teaching metacognition should look different depending on the age of students, the content of the course, and other variables.

Position metacognition in an inclusive teaching framework: Evidence from the comparative scan suggests organizations pay little attention to how metacognitive knowledge and skills may develop and present differently among various groups of children, depending on differences such as their learning habits, abilities, ages, and cultures. Instructional metacognitive practices should take these attributes into consideration and align to the needs and cultures of students. Unfortunately, metacognitive research is severely limited in this regard and insufficiently addresses issues of equity. This will be a heavy lift for IB, but one that is important and aligns with its values.

Articulate the alignment of metacognition across IB programmes: IB should consider delving further into the best practices in teaching and learning metacognition across grade levels. IB could explore the horizontal alignment within IB programmes and the vertical alignment across IB programmes to ensure the programmes include a comprehensive learning progression that scaffolds learning across programmes. This would also allow IB to provide more explicit guidance to schools and teachers on scaffolding metacognition instruction across grade levels. IB could develop a learning progression specific to metacognition either explicitly or implicitly through the inquiry cycle, which includes a strong emphasis on reflective practice.

Consider performing additional research: This project, like all projects, was limited in scope and therefore could not address all questions related to metacognition as it pertains to IB education. As the IB continues to deepen and broaden metacognitive practices in its programmes, we recommend its leadership consider conducting additional research into the following areas:

- **Metacognitive practices in IB classrooms.** The current project did not examine classroom practices. Examining metacognitive practices in the classroom may help the IB to more accurately measure the extent to which metacognition is integrated into the IB curriculum.
- **Metacognition theory of change.** IB could consider developing a theory of change for metacognition across the continuum of IB programmes. IB could also develop a better understanding of how metacognition is being implemented by examining the theories of action that IB schools use to implement metacognition in IB classrooms. These explorations could include factors that make interventions more effective, such as duration, explicitness, and combination of knowledge with strategies.
- **IB professional development.** Although we reviewed workshop documents, it became clear through the course of this project that IB would benefit from a close examination of metacognition in IB professional development documentation and workshops.
- **Subject-specific integration of metacognition.** Some of the most impactful work IB can do is to conceptualize how metacognition fits into all courses and across all programmes. This may require an investigation into which metacognitive practices are most effective in or easy to integrate into particular subjects. For example, some components of metacognition in a mathematics classroom should look very different from aspects of metacognition in a social studies classroom.

Future Considerations

Although this study provided a snapshot of metacognition within and across IB programmes, there are a few considerations that IB should continue to explore in their internal discussions. This study helped to shed light on how metacognition is currently being incorporated; however, IB should consider how metacognition should be incorporated in the future. Specifically, IB may want to consider the priority that metacognition is given, how to balance metacognition with content and other priorities, and how explicit they want to be in their references to metacognition. IB may want to consider what metacognitive students should be expected to know, think, or do and how do IB learning experiences contribute to that. Further, IB should consider what documents or type of documents should provide guidance on metacognition to teachers and schools. It may be that some information could be provided in-depth in a few documents, while other guidance needs differing depths of coverage across more documents.

These decisions indirectly communicate the expectations around and importance of metacognition across IB programmes, which ultimately impacts the success of metacognition implementation.

To read the full report, please contact the IB Research department at research@ibo.org.