



RESEARCH SUMMARY

Critical thinking in the International Baccalaureate Middle Years Programme: An international, multisite evaluation

Summary developed by the IB Research and Design department based on a report prepared by:
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Purpose

This study investigated differences in critical thinking skills of grade 9 and 10 students enrolled in either the International Baccalaureate (IB) Middle Years Programme (MYP) or the national curriculum in **Australia, England and Norway**. The primary aim of the study was to examine the relationship between participation in the MYP and students' levels of critical thinking, as measured by an established critical thinking assessment. Additionally, the study identified features of the MYP framework that may support critical thinking development and explored how MYP students, teachers and coordinators encounter, experience and develop critical thinking.

Research methods

The first phase of the study involved a document analysis of 13 internal and public documents and a review of literature related to the MYP and critical thinking teaching and assessment. In phase two, the researchers collected quantitative data from grade 9 and 10 students. Student data included a range of background characteristics (personality, socio-economic status and cognitive abilities) as well as critical thinking skills (measured by the Cornell Critical Thinking test). In total, there were 870 participants—386 MYP and 484 non-MYP students, from 21 schools across Australia, England and Norway. Researchers used regression analyses and propensity score matching to compare the difference in critical thinking skills between groups. During phase three, the researchers collected interview data from MYP teachers and coordinators (45) and students (46), in 10 MYP schools.

Findings

Elements of the MYP that may support critical thinking

The researchers conducted a document analysis of MYP policy documents, instructional materials, and subject guides to explore possible pathways by which MYP students may develop critical thinking (see the full list of documents in table 1 in the full report). Based on this analysis, the researchers identified three themes: principled action, understanding the nature of language, and assessment and accountability.

Principled action

“Principled action, as both a strategy and an outcome, represents the IB’s commitment to teaching and learning through practical, real-world experience” (IBO, 2014, p. 11). The principled action theme reflects the active (authentic) steps that are implemented in the MYP to ensure students actively engage in critical thinking. The researchers identified several ways in which the concept of principled action could foster critical thinking development. Principled action may support critical thinking by:

- explicitly encouraging an ethos of thinking
- utilizing inquiry-based, interdisciplinary and contextualized approaches to learning
- creating opportunities for authentic, real-world learning.

Understanding the nature of language

The second theme pertains to the importance the MYP places on the understanding of how language

is constructed and expressed for the development of critical thinking.

The document analysis identified two main ways that understanding the nature of language could support critical thinking:

- developing critical reading skills
- removing barriers and extending students’ capacity for critical thinking across languages.

Assessment and accountability

Critical thinking is assessed both directly and indirectly in the MYP. There was a clear emphasis on the assessment of critical thinking within the individuals and societies course. Additionally, critical thinking was indirectly assessed in the remaining MYP subject areas. The accountability that assessment provides is central to the effectiveness of assessment in the MYP. A summary of the ways in which assessment and accountability may foster critical thinking in the MYP is listed here:

- using direct and indirect approaches to assessing critical thinking
- employing explicit assessment language around critical thinking
- creating opportunities to strengthen content knowledge
- using a pragmatic-oriented assessment policy to ensure assessment fidelity.

Critical thinking comparison

Overall comparison

The researchers used regression analyses to explore overall differences in critical thinking between samples of MYP and non-MYP students. After accounting for various student characteristics—including student personality variables, cognitive abilities, socio-economic status indicators, and demographic characteristics—participation in the MYP was a significant predictor of critical thinking. **Specifically, MYP students had significantly higher levels of critical thinking compared to their non-MYP peers with a moderate effect size ($p < .001$; $\beta = 0.33$).**

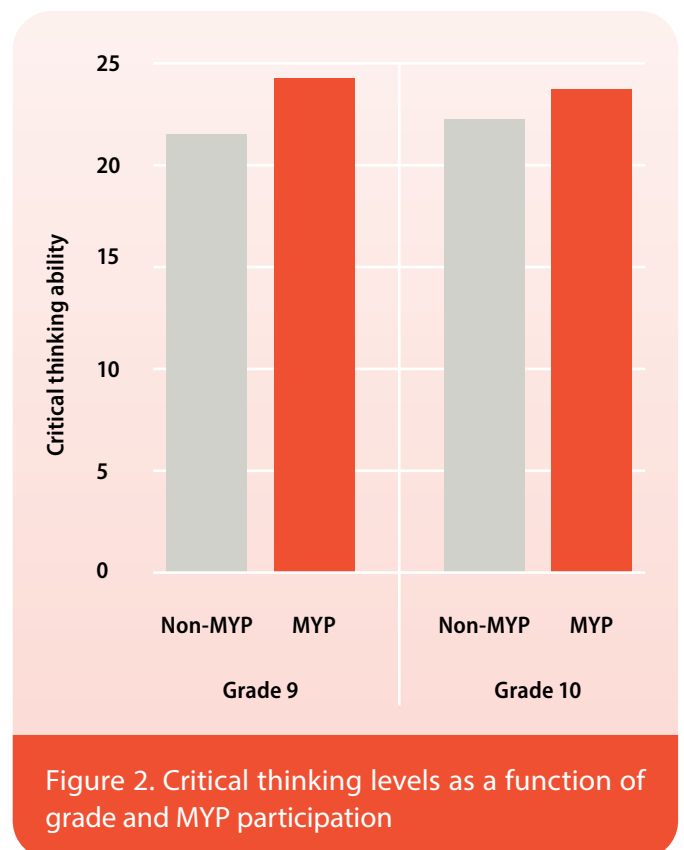
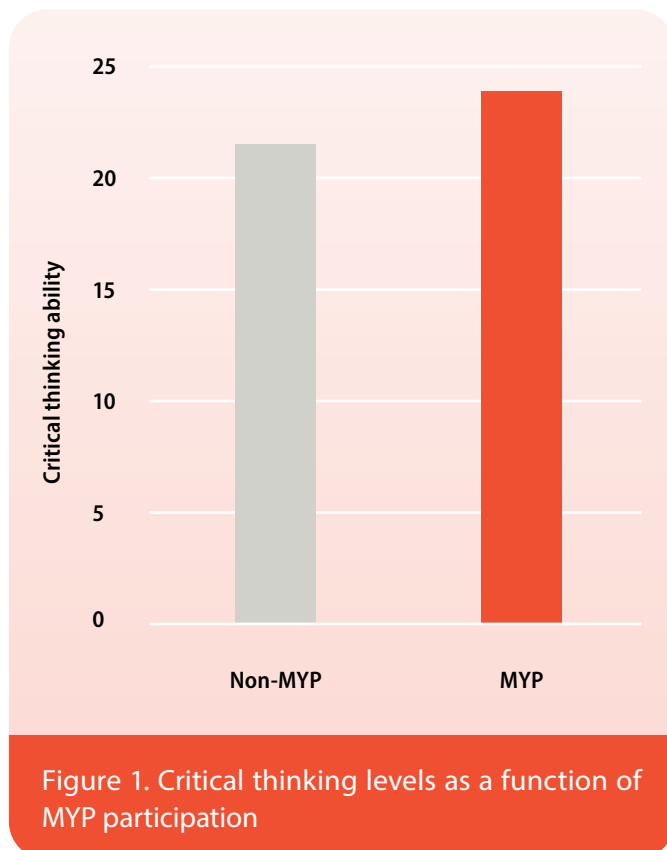
Comparison of matched samples

The researchers also used propensity score matching—a statistical technique that allowed them

to construct matched MYP and non-MYP samples with similar characteristics for comparison. After matching the MYP and non-MYP samples, using several variables, participation in the MYP was a positive predictor of critical thinking ability with a moderate effect size ($\beta = 0.38$), indicating the **students enrolled in the MYP have significantly higher levels of critical thinking ability than their non-MYP peers ($p < .001$)** (see figure 1).

Grade-level comparisons

In both grades 9 and 10, participation in the MYP was found to be a positive predictor of critical thinking, with a moderate effect size at both levels ($\beta = 0.37$ and $\beta = 0.33$ respectively). **Across the two grades, MYP students had a statistically significant advantage in critical thinking compared to non-MYP students** (Grade 9: $t(383) = 3.92, p < .001$; Grade 10: $t(483) = 3.37, p < .001$) (see figure 2).



Country-level comparisons

MYP students had significantly higher levels of critical thinking than non-MYP students in both **Australia** (moderate effect size; $p < .05$, $\beta = 0.30$) and **England** (moderate to large effect size; $p < .00$, $\beta = 0.62$). In **Norway**, there was no statistical difference between groups of students. However, the matching procedure was less effective for the Norwegian sub-sample and, as a result, the Norwegian country-level findings should be interpreted with a degree of caution.¹



MYP students' and teachers' experiences with critical thinking

The researchers interviewed students, teachers, and coordinators to learn more about their perceptions of the learning, teaching, and assessment of critical thinking in the MYP. In total, 46 students and 45 teachers were interviewed across 10 schools in Australia, England, and Norway.

Students' views

Self-directed learning

Across all student interviews, students emphasized the importance of ownership over their learning experiences as a primary contributor to their critical thinking development. Students perceived that the MYP provided the opportunity for inquiry-based

learning, which they believed strengthened their independence of thought and therefore their critical thinking.

Although students spoke favourably about the MYP, there were some challenges with the student-led nature of the curricula—at times, they were not certain about what was expected of them as they embarked upon independent learning. Therefore, the MYP may benefit from having more targeted accommodations around how to transition students most effectively to the MYP approach to learning and thinking.

Transfer of thinking skills

Students reported having the capacity to transfer thinking across different MYP subjects, which

¹ From a methodological standpoint, the matching at the country level was less effective for Norway than for Australia and England. This can emerge with matching on fewer cases, as well as the fact that in this study, researchers were limited by the number of Grade 9 students in the non-MYP sample in the Norwegian sub-sample. Additionally, several of the schools in Norway had only recently implemented the MYP and might not have had time to implement the programme with high levels of fidelity, particularly given disruptions caused by the COVID-19 pandemic.

they believed supported their critical thinking. In each country, students emphasized the role of interdisciplinary units in facilitating this transfer of thinking.

Students also highlighted the importance of applying their thinking to real-life situations, citing mathematics as a key subject area where this is applied. For example, as one student noted: “In math, we receive a lot of real-life applications, problems where we have to apply the things we learn in school to real-life applications, and that really makes us think a lot” (Student, MYP 5, Norway).

Distinctive features of Individuals and societies

When asked to generate specific examples of a subject that they perceived to facilitate critical

thinking, students felt that individuals and societies provided a structured, consistent, and more explicit environment that advanced their critical thinking. In addition, students identified the history component of individuals and societies as being most beneficial to strengthening their critical thinking. More generally, the strategies that they learned in individuals and societies—particularly source analysis—enabled them to gain a more critical mindset in assessing the reliability and validity of sources.

Teachers’ views

Individual differences in thinking

Teachers and MYP coordinators noted that the facilitation of critical thinking was challenging



at times, given the individual differences among students, including their cultural, religious and linguistic backgrounds. Importantly, however, teachers expressed that the nature of the MYP creates personalized learning opportunities for all students in a way that strengthens their capacity for critical thinking. Moreover, teachers expressed that the structure of the MYP lends itself to accommodating individual differences and engaging student agency by directing their own learning. Consequently, several teachers shared that the MYP provides the opportunity for students to participate in scaffolded formative classroom activities and the personal project in which teachers provide individual feedback.

Explicit assessment language

Teachers noted that an explicit assessment language serves at least three purposes within the MYP with respect to fostering critical thinking.

1. Assessment criteria help showcase to students the importance of critical thinking.
2. Shared language offers a clearer understanding of expectations between students and teachers when engaging with critical thinking.
3. Explicit assessment language helps maintain fidelity and accountability in implementing the MYP framework with the aim of strengthening critical thinking.

Time within the MYP

Teachers were mindful that students were from varying educational backgrounds, including those who had spent several years within the MYP and those who may have experienced only a single year within the MYP context. Teachers observed

that students who came from a non-IB background or had less time in the MYP experienced difficulty or did not readily see the benefits of engaging with a reflective, self-directed ethos of learning. Importantly, teachers identified that it was noticeable that as students spent a longer time within the MYP, “they [students] get progressively better at it [critical thinking] because we sort of follow the same system in year 7, 8, 9 and 10, so we just build on those skills. So, by the time they’re in year 10 [MYP 5, final year of MYP offering], they’re actually very good at demonstrating [and] analysing different perspectives” (Teacher, individuals and societies, Australia). Several teachers noted that time was also important for themselves, and their newer colleagues to acclimatize to the requirements of teaching and assessing critical thinking in the MYP.

Professional development and collaborative planning

Several teachers spoke about the importance of professional development in strengthening their teaching and assessment of critical thinking. Teachers found professional development opportunities useful for identifying strategies that they can readily implement within their classroom. Additionally, collaborative planning was viewed as an important extension of professional development, and teachers noted that it was important to plan both within subjects and across subjects. Although teachers generally expressed a positive role for collaborative planning and externally sourced resources, they suggested several ways in which the IB may be able to enhance their teaching and assessment of critical thinking, including the provision of more context-specific exemplars.



Summary

Through the qualitative component of the study, researchers found a range of benefits of implementing the MYP for the teaching and assessment of critical thinking. Additionally, across each of the three locations—Australia, England, and Norway—MYP students, teachers and coordinators perceived that participating in the MYP confers an advantage in critical thinking. This perception was supported by the results of the quantitative analysis, which indicated that MYP students generally had higher levels of critical thinking skills compared to their matched, non-MYP counterparts. Overall, this study provides encouraging evidence that the MYP contributes to students' critical thinking skills by embracing evidence-based, student-centred pedagogical approaches.

Reference

International Baccalaureate. (2014). *MYP: From principles into practice*. International Baccalaureate Organization.

This summary was developed by the IB Research department. A copy of the full report is available at: www.ibo.org/en/research. For more information on this study or other IB research, please email research@ibo.org.

To cite the full report, please use the following:

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