

Meanings and practices of inquiry-based teaching and learning in the International Baccalaureate

Research summary July 2022

Summary developed by the IB Research department based on a report prepared by:
Dr Joseph L. Polman and Dr Karla Scornavacco
University of Colorado Boulder

Study managed on behalf of the IB Research department by Dr Michael Thier

Purpose

Through its centering in the mission statement and learner profile, the International Baccalaureate (IB) seeks to integrate inquiry-based teaching and learning (ITL) across all programmes and subjects. This study examines the meanings and practices of ITL in a sample of IB World Schools (IBWSs), describing the IB approach to, and implementation of, ITL. The study involved students, educators¹ and schools engaged in the Primary Years Programme (PYP), Middle Years Programme (MYP) and/or Diploma Programme (DP).

Research design

This study was conducted in two main phases. The first phase included an academic literature review, interviews with key personnel in organizational leadership positions² and analysis of relevant

IB documents. The products of this work were preliminary theories of change, intended to describe how ITL are supported and developed in IBWSs. First, an organizational theory of change focused on the work at the IB and, second, an instructional theory of change focused on the work in the classroom.

The researchers then refined and enhanced the initial findings by examining perspectives and practices of ITL in a selection of eight schools across the IB programmatic continuum, in two IB regions (Africa, Europe and the Middle East, and the Americas). The research team conducted qualitative analysis of 9 focus group interviews and 13 individual interviews, involving a total of 46 IB educators. The final products of this study include proposed organizational and instructional theories of change for ITL, along with a rich description of what IB stakeholders mean by ITL and how ITL varies across programmes.

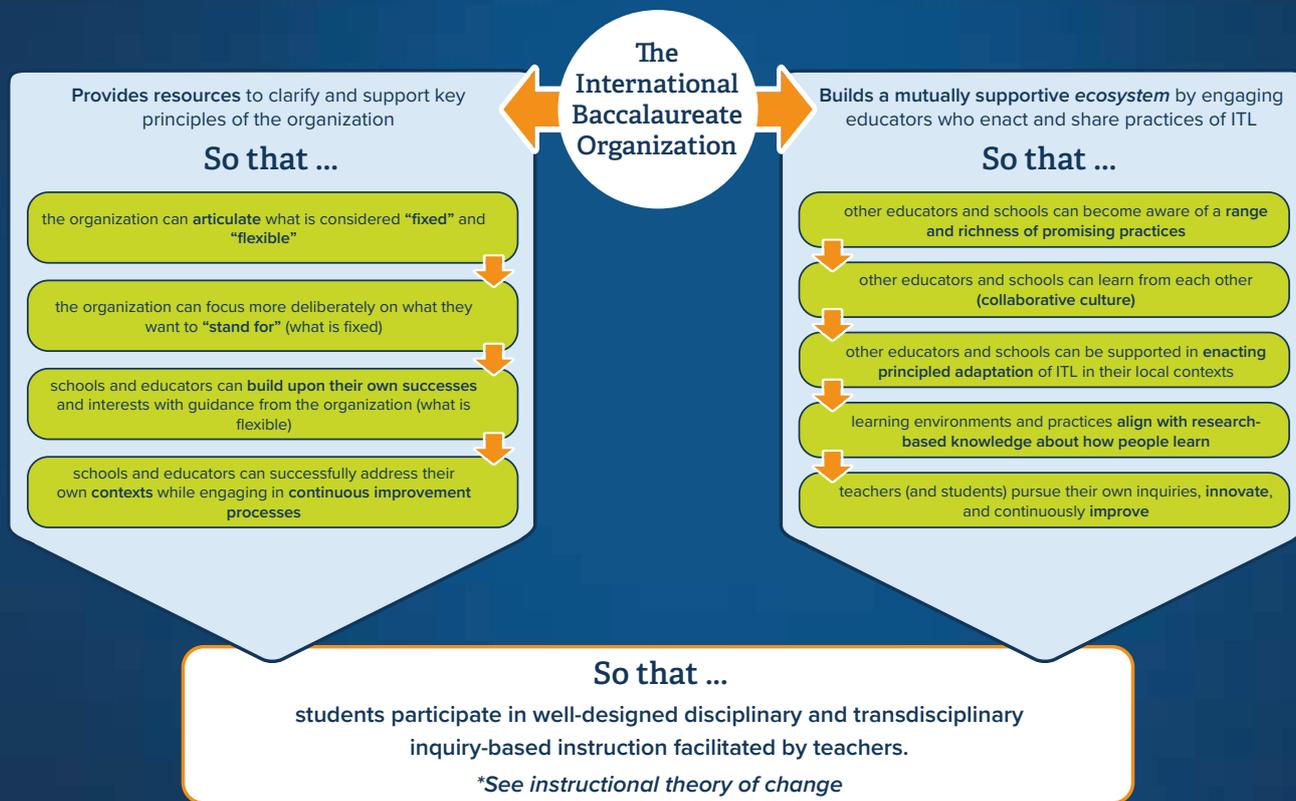
¹ Throughout this study, the term “IB educators” is used broadly to refer to all education professionals working in IBWSs and the IB.

² In this instance, “organizational leadership” refers to relevant IB staff and representatives from a state association of IBWSs.

INQUIRY-BASED TEACHING AND LEARNING ORGANIZATIONAL THEORY OF CHANGE

Goals

- Engaged students, critical thinkers and problem-solvers, and lifelong learners.
- Students develop the dispositions and skills to pursue meaningful questions that are not only interesting to them and others, but that also lead to a better, more peaceful world.



Scornavacco, K., & Polman, J. L. (2022). *Inquiry-based teaching and learning organizational theory of change*. International Baccalaureate Organization.

Figure 1. Organizational theory of change

Findings

Organizational theory of change

The researchers propose an organizational theory of change for how the IB supports IBWSs in implementing ITL. This theory of change articulates two organizational strategies: 1) provide resources to clarify and support key principles of the organization, and 2) build a mutually supportive ecosystem by engaging educators who enact and share practices of ITL. The two strategies are shown in parallel to each other, as they appear to be equally important and also mutually reinforce one another. In other words, the resources support the participants in the ecosystem, such as teachers and school leaders, and the actions of educators in the ecosystem produce new resources.

These two strategies lead to a series of interim outcomes.

- **Providing resources** enables the organization to articulate what is **fixed** and **flexible**, focus deliberately on what it **stands for**, help schools and educators to **build upon their own successes** and support schools and educators in addressing their own **contexts** while engaging in **continuous improvement processes**.
- The **mutually supportive ecosystem** refers to educators and schools supporting one another to learn about a **range of promising practices**, create a **collaborative culture** where schools learn from each other, support educators and schools in **enacting principled adaptation** of ITL within their contexts, create learning environments that

align with research-based knowledge about how people learn and encourage teachers to pursue their own inquiries to innovate and continuously improve.

The hypothesis is that if the organizational theory of change operates successfully, then teachers should be able to facilitate and students should be able to participate in well-designed inquiry-based instruction.

Instructional theory of change

Both teacher and student actions have an impact on creating a productive learning community (as illustrated by the arrows in figure 2). Relationships between teachers and students are important, and many of their respective actions have reciprocal relations. For example, teachers listen deeply to students' questions and curiosities, and then pose questions, interact with students in ongoing

dialogue and provide feedback on possible directions for student inquiry. Importantly, teachers provide strategic supports for students to develop understanding, learn to collaborate and create products. Teachers can also help by fostering an open classroom environment and demonstrating care for students.

In inquiry-based classrooms, students' questions and curiosities drive classroom activity and provide purpose for their work on a daily basis and across time. Teachers challenge students to learn to work independently, as well as collaboratively during their inquiries. Students collaborate with one another on separate and shared inquiries through talk, interaction and discussion, and spend time creating products or performances, sharing them with various audiences. Inquiry also allows students to take action to contribute meaningfully to their communities.



Figure 2. Instructional theory of change

Further, along the way and/or afterward, students have opportunities to **reflect**, which drives both their learning and overall development.

According to the proposed instructional theory of change, these actions and conditions enable students to participate in well-designed and well-facilitated disciplinary and transdisciplinary inquiry-based learning, resulting in a number of interim outcomes (see the light green box at the far right of figure 2). By pursuing their own questions and curiosities, supported by their teachers and fellow students, students are **engaged** and **interested** in their day-to-day work. Students can exercise **agency**, rather than being passive recipients of transmitted knowledge—they have opportunities to exercise agency by expressing their voices, making meaningful choices and owning their learning. These are also major motivational benefits, which encourage students to take **risks**, overcome **uncertainties**, **frustrations** or obstacles they face along the way and explore alternative approaches during their inquiries. Well-designed and well-facilitated inquiry classrooms enable students to **deeply learn** concepts and

practices. The productive, action-oriented work they do in this environment can result in students feeling satisfaction about what they learn and accomplish, because it is **connected** to their own lives, the lives of others in their communities and the world outside school.

IB educators aspire for students to reach these specific outcomes, so that a cumulative effect can be achieved, namely that students cultivate enduring **dispositions, knowledge** and **skills** for lifelong learning (as shown in the dark green box at the bottom of figure 2). If successful, students will develop not only the mindset of valuing curiosity but an assumption that growth is possible. The practical and conceptual knowledge and skills students develop connect to traditional disciplinary learning goals and provide them with powerful tools and capabilities for future action.

The ultimate aspirational impact of this theory of change is one aspect of the overall mission of the IB—to educate and thereby develop people who help to create a better and more peaceful world—and

Benefits for students	Important trade-offs	Constraints	Facilitators
Greater engagement	Breadth versus depth of content instruction	Time	Time for planning
Possible improvement of well-being	Prepping for standardized tests versus pursuing student interests and emergent learning opportunities	Need for meeting IB or other educational standards	Supportive resources and ecosystem
Accessibility to learning		Outdated notions that conceptual content learning of the basics must precede inquiry	Creating and sustaining a culture of curiosity
Growth mindset			Teacher collaboration and professional learning
Greater agency			IB evaluation (self-study)
Confidence			Celebrating products and performances of student inquiry
Relevance of learning			
Critical thinking			
Deeper learning			
Greater retention			
Developing lifelong learners			

Table 1 (see page 5). Teacher and leader perceptions of the benefits, trade-offs, constraints and facilitators of ITL

appears in each of the key documents reviewed in this study. While this is a lofty aspiration, it is included in the theory of change to mark the guiding vision. When integrated with other IB priorities beyond inquiry, as emphasized in the IB learner profile (IBO, 2013) and other relevant documents, inquirers will be internationally minded and will recognize their common humanity and shared guardianship of the planet.

Incorporation of ITL by programme

Findings from the document review demonstrated that inquiry is pervasively present and forefronted in the PYP, as IB documents and institutional representatives expect PYP teachers to develop curricula framed as a transdisciplinary programme of inquiry and facilitate their students through cycles of inquiry related to six transdisciplinary themes. Inquiry is strongly present in the MYP as well through the programmatic element of the personal project. In the DP, the emphasis is on disciplinary courses to prepare students for particular disciplinary content to be covered in high-stakes examinations, which may limit the degree to which student inquiry drives instruction. However, the theory of knowledge course and, in particular, the extended essay offer opportunities for student inquiry.

Educator perceptions of and engagement with ITL

Overwhelmingly, across all regions and schools, IB educators spoke of ITL as an approach to learning and living that engages students' curiosity and has lasting benefits for students as learners and contributors to the world. Table 1 (see page 4) shows key elements that study participants perceived as benefits, important trade-offs, constraints and facilitators of ITL.

Conclusions

ITL is an important component of the success of IB programmes. IB educators have a strong sense of what ITL can and should mean and how to put it into practice due to an effective set of resources and a supportive ecosystem. This study could serve as the basis for further research to build upon these theories of change and to explore inquiry-based learning within classroom settings.

Reference

International Baccalaureate. (2013). *IB learner profile*. International Baccalaureate Organization. <https://ibo.org/contentassets/fd82f70643ef4086b7d3f292cc214962/learner-profile-en.pdf>

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: Polman, J. L., & Scornavacco, K. (2022). *Meanings and practices of inquiry-based teaching and learning in the International Baccalaureate*. International Baccalaureate Organization.