

International Practices and Paths of Interdisciplinary Learning: Taking the IB Curriculum as an Example

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Abstract: Interdisciplinary learning can better respond to real-world changes, cultivate innovative talents, and meet the needs of the times. As a globally recognized educational system, the IB curriculum needs to implement the concept of interdisciplinary learning, promote educational innovation, and provide references for subsequent teaching. From the perspective of the IB curriculum, this paper analyzes its interdisciplinary learning concept and explores specific practical strategies, aiming to cultivate students' comprehensive quality and problem-solving abilities. Through the research on the interdisciplinarity of the IB curriculum, it can accumulate experience for deepening basic education reform and exploring quality-oriented teaching transformation.

Keywords: Interdisciplinary learning; International practice; IB; Inquiry-based learning

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1. Introduction

In the current era, the challenges facing society are becoming increasingly complex and comprehensive, such as climate change and artificial intelligence ethics, which often require interdisciplinary knowledge to address. In traditional knowledge teaching, the traditional subject-based model has played an important role, but due to disciplinary barriers, it is easy to cause fragmentation of students' knowledge structures, making it difficult to deal with real-world problems. Based on this, it is necessary to attach importance to the development of interdisciplinary learning, promote the deepening of educational reform, and accelerate the transformation of educational concepts towards literacy training. The core goal of the IB curriculum is to cultivate lifelong learners with international-mindedness, which clearly includes literacy, such as knowledge and thinking. To successfully achieve relevant goals, it is necessary to attach importance to the development of interdisciplinary teaching and implement it in all projects and courses. By building an interdisciplinary learning framework for the IB curriculum, students can better participate in international knowledge learning and lay the foundation for subsequent curriculum-based education.

2. Interdisciplinary learning concept in the IB curriculum

The interdisciplinary learning philosophy of the IB curriculum is not an isolated teaching method, but a natural extension of its overall educational philosophy and curriculum design logic. This philosophy is built on several interrelated core pillars.

First, the IB curriculum takes international-mindedness and the cultivation of goals of learners as a value guidance. The IB curriculum not only focuses on the local context but also attaches importance to cultivating individuals who understand global issues. Due to the broad perspective of this curriculum, it is necessary to actively break disciplinary limitations. Among the educational goals, being knowledgeable and thinking critically clearly require integrating multi-domain knowledge and finding solutions to problems in uncertain situations, which are themselves core contents of interdisciplinary learning ^[1].

Second, it adheres to a “concept-driven” curriculum view. Unlike traditional teaching that only focuses on factual knowledge and skills, the IB emphasizes organizing learning around “key concepts”. These concepts are abstract viewpoints that transcend specific disciplines, are universal and transferable, such as “form”, “function”, “causation”, “change”, and “connection”. In the Primary Years Programme (PYP), six transdisciplinary themes provide a macro context for students to explore big concepts. In the Middle Years Programme (MYP), each subject group teaches around 16 key concepts and a series of related concepts, and encourages the establishment of conceptual connections between different disciplines. Anchored by concepts, knowledge from different disciplines can be organized and connected around the statement of inquiry ideas, enabling students to gain insight into the deep understanding behind knowledge rather than staying on surface information, which lays a solid foundation for interdisciplinary understanding.

Third, it advocates a contextualized and inquiry-based learning path. The IB believes that valuable learning usually occurs when knowledge is connected to real-world contexts. Based on this, interdisciplinary learning in the IB curriculum relies on the investigation of local and global contexts. Whether it is the survey activities carried out by PYP students on the community environment or the selection of real-world problems faced by DP students when writing extended essays, learning is usually placed in specific contexts ^[2]. At the same time, it is accompanied by an inquiry cycle, which needs to focus on stimulating interest, exploring problems, and conducting in-depth analysis. The development of this cycle can be applied to knowledge learning in various disciplines, facilitating the deepening of interdisciplinary learning and helping students transform from passive knowledge receivers to active constructors. Faced with complex problems, they can naturally carry out knowledge search, evaluation and other activities, helping students form interdisciplinary thinking.

Fourth, it usually relies on a coherent curriculum framework. Although IB programs are targeted at different age groups, they uphold a consistent interdisciplinary philosophy with increasing complexity. The PYP stage usually adopts a “transdisciplinary” model, where disciplinary boundaries are relatively vague, and learning is carried out around six themes, which can help students establish an overall understanding of the world ^[3]. When entering the MYP stage, equal emphasis is placed on interdisciplinary and multidisciplinary learning. Students can conduct in-depth knowledge learning, complete interdisciplinary units, actively participate in community design and other projects, and actively establish disciplinary connections. In the most challenging DP stage, while specializing in six subject groups, students must take the core course “Theory of Knowledge (TOK)”, which directly addresses the nature, scope, acquisition methods and limitations of knowledge. By questioning the assumptions and methodologies of various disciplines, it achieves profound interdisciplinary reflection at the metacognitive level ^[4].

2. Practical strategies for interdisciplinary learning in the IB curriculum

2.1. Clarify learning themes and take core concepts and real-world problems as links

Successful interdisciplinary learning starts with a central idea or problem that can effectively integrate different disciplines and stimulate students' in-depth thinking. The IB has elaborate designs for this.

First, build a hierarchical idea framework. In the PYP, six transdisciplinary themes provide a macro framework for the school's annual curriculum. On this basis, the school's teacher team will jointly develop more specific unit inquiry themes combined with local culture and students' interests. For example, under the big idea of "Sharing the Planet", the unit topic of "Sustainable Use of Water Resources" may be derived. This big idea naturally involves multiple fields such as science, geography, mathematics, language, and individuals and societies ^[5]. In the MYP, the themes of interdisciplinary units are collaboratively designed by teachers of relevant disciplines, which must involve two or more subject groups and revolve around a "global context" that can trigger debate or inquiry, such as "How does technological development reshape human social behavior?"

Second, highlight the core status of concepts. When determining themes, the IB emphasizes extracting "key concepts" and related concepts that drive inquiry ^[6]. For example, in the above water resources unit, concepts such as "responsibility", "sustainability", and "scarcity" can become the red thread running through the learning of various disciplines. In the MYP interdisciplinary unit plan, teachers must clearly write the central idea, related concepts and global context to ensure that learning goes beyond the factual level and points to conceptual understanding.

Third, anchor real-world contexts. All concepts must be connected to students' life experiences or the larger world they live in (global context). The IB MYP explicitly proposes "global contexts" as a lens for designing learning situations. Placing the "water resources" theme under the background of "globalization and sustainability", students' inquiry will naturally turn to practical aspects such as the impact of international trade on virtual water and the comparison of water resource policies in different countries, making learning full of a sense of meaning and urgency ^[7].

2.2. Carry out inquiry activities and take student-centered and reflection cycles as engines

After determining the concept, the IB guides students to construct interdisciplinary understanding through elaborately designed inquiry activities. Its core method is the "inquiry cycle".

First, stimulate connections and raise questions. Teachers can display complex phenomena, works of art and other content to effectively stimulate students' enthusiasm for interdisciplinary inquiry, and put forward differentiated questions from the perspectives of different disciplines. For example, for paintings depicting cities during the Industrial Revolution, students can usually put forward their own questions from historical, artistic and scientific perspectives. The development of this process helps to break the sense of separation between disciplines and helps students recognize the multi-dimensional characteristics of problems.

Second, multi-path exploration and integrated application. Students are divided into groups, and around different sub-questions, they collect information and conduct analysis using research methods unique to each discipline. Science students may test local water quality, geographers draw water resource maps, and social science researchers interview community members. Subsequently, each group needs to share their findings, jointly piece together the whole picture of the problem, and negotiate to propose comprehensive solutions or action initiatives ^[8]. The IB particularly emphasizes "taking action", encouraging students to apply what they have learned to practice, such as designing water-saving schemes and implementing them in schools, and

making promotional materials to raise community awareness. This process forces students to integrate and innovate knowledge at the application level.

Finally, continuous reflection. Reflection is an indispensable part of the IB inquiry cycle, which helps students deepen their interdisciplinary thinking abilities. Teachers can encourage students to think by setting structured questions and exploring the connections and differences between various types of knowledge. Among them, in the DP's Theory of Knowledge course, the development of reflection activities allows students to conduct systematic examinations and understand the cognitive methods and values of different knowledge fields.

2.3. Organize interdisciplinary learning and take collaborative culture and structural support as guarantees

The effective implementation of interdisciplinary learning depends on the establishment of organizational support and a collaborative culture at the school level. The IB provides specific frameworks and requirements.

First, attach importance to the mandatory guarantee of curriculum design. The IB can clearly stipulate the curriculum and time requirements for interdisciplinary learning in each program. For example, the MYP program requires students to complete multiple interdisciplinary unit studies within five years and sets specific assessment standards. The core courses "Theory of Knowledge" and "Extended Essay" in the DP are essential for obtaining a diploma^[9]. This structural guarantee turns interdisciplinary learning from an "optional item" into a "required item", promoting teachers and students across the school to take it seriously.

Second, actively build a teacher collaborative teaching model. The IB curriculum encourages the development of interdisciplinary units and collaborative teaching to create a good educational environment. Common collaboration models include the following types: parallel model, where teachers of different disciplines can deal with the same theme in their own subject teaching and integrate them through common tasks at the end^[10]; complementary model, where the teacher team can jointly participate in unit planning, take the lead in teaching activities at each stage, clearly divide disciplinary boundaries, and closely connect them; integrated model, which encourages two or more teachers to teach in the same classroom, promote the integration of disciplinary content, and guide and inspire students^[11].

Third, carry out targeted reform of assessment. The IB's assessment system is highly consistent with its interdisciplinary philosophy. It adopts a diversified assessment method, including formative assessment and summative assessment^[12]. For interdisciplinary learning, the focus of assessment is not on retelling knowledge of various disciplines, but on examining students' ability to integrate and apply knowledge to solve problems. The assessment criteria for MYP interdisciplinary units clearly include: "Evaluating", "Synthesizing", "Reflecting", etc.^[13] The DP's "Extended Essay" and "Theory of Knowledge" essays are evaluated from multiple dimensions, such as the definition of research questions, comprehensive application of knowledge, critical thinking, and argumentation logic. Such an assessment baton ensures the consistency of teaching, learning and assessment, and guides students towards the development of interdisciplinary literacy^[14].

Fourth, continuously support professional development. The IB can provide teachers with workshops, rich online resources and knowledge learning communities, which can set up training activities on interdisciplinary curriculum design, inquiry methods and other aspects. The setting of guarantees can help teachers break through the limitations of their disciplinary backgrounds and proficiently master interdisciplinary curriculum design and practical skills^[15].

3. Conclusion

In summary, in the practice of the IB curriculum, the feasibility of systematic interdisciplinary learning has been clarified, which can help students cope with future challenges. The key to IB curriculum teaching is to take interdisciplinarity as the cornerstone of the curriculum system, coordinate with value concepts and inquiry models, and actively build a good ecological support system. From the perspective of basic education curriculum reform, the practice of the IB curriculum brings the following inspirations: first, interdisciplinary learning is inseparable from top-level design and curriculum integration. It is no longer sporadic thematic activities, but like the IB, carrying out cohesive and hierarchical design in different academic stages. Second, the development of concept-driven teaching helps to break the problem of knowledge fragmentation. In the teaching process, it is necessary to pay attention to factual knowledge and grasp disciplinary and interdisciplinary concepts. Finally, in interdisciplinary learning, real inquiry and emotion are the core. Learning needs to be combined with students' lives and global issues, which can not only solve real problems but also construct the meaning of knowledge.

Disclosure statement

The author declares no conflict of interest.

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