

Research summary

Primary education: A literature review

Based on a research report prepared for the IB by:

Dr. Tony Eaude

Introduction

The literature review was commissioned by the International Baccalaureate (IB) to inform a review of its Primary Years Programme (PYP). This document is a summary, please refer to the full report for a more comprehensive review of the literature. Three main questions are addressed through the conduct of a comprehensive search and systematic review of literature on primary education in relation to the written curriculum and taught curriculum for students aged 3 to 12, as follows.

- 1) What have been the main political, social and cultural influences, and the key trends evident across different countries and jurisdictions, in relation to the written and taught curriculum in the primary years since 2003?
- 2) What are the key theoretical lessons from research, especially since 2003, about children's learning in the primary years, and their implications for the written and taught curriculum?
- 3) How might the aims of the IB and its current PYP be affected by the influences and trends identified and how does it, and could it best, take into account the lessons from research about young children's learning?

The literature review summarizes accessibly complex, sometimes contested, ideas from a very substantial field of research, especially in the developmental sciences. It also draws on as comprehensive as possible a search of recent peer-reviewed literature in English to identify key trends and research and synthesize these into a coherent argument about what is most relevant to the curriculum for 6 to 12 year old children and a review of the PYP. Accordingly, it considers possible implications for a review of the PYP of social, cultural and technological changes, of the research in the developmental sciences and how tensions resulting from recent trends, influences and initiatives in the primary curriculum may be best resolved.

Key points of themes in question

Understanding primary curriculum design and implementation considers inherent challenges in curriculum design. A distinction is made between the written and the taught curriculum, with the latter encompassing the whole learning and teaching experience, and between different views of knowledge, not just as propositional (factual) but also procedural (ways of working) and personal/interpersonal. A written curriculum to be implemented worldwide across different cultures must take account of different cultures and traditions of pedagogy. Since indirect influences, including social, cultural and other educational policies, are powerful drivers of how the written curriculum is taught, teachers need a deep understanding of principles and practice and how these interrelate. Frequent change makes it hard for schools and teachers to embed new initiatives. Curriculum design should be, though rarely is, based on educational aims, principles and values about the purpose of education and the type of society to be achieved. Historically, what is often described as “the basics”—reading, writing and mathematics—have usually dominated the primary curriculum.

The International Baccalaureate and the Primary Years Programme connects the PYP to the IB's mission and learner profile. The mission involves developing inquiring, knowledgeable and caring young people and helping to create a better and more peaceful world through intercultural understanding and respect. The learner profile sets out specific attributes to enable this. The PYP organizes the written curriculum by both subject areas and transdisciplinary themes, with a strong emphasis on concept development, on curricular breadth and coherence and on sustained meaningful enquiry.

Recent trends, influences and initiatives in the primary curriculum highlights as significant recent social and cultural trends, changing patterns of economic and political power, changes in the structure of communities and families, greater cultural, linguistic and religious diversity, technological innovation and a greater concern with children's health and well-being. There has been convergence, worldwide, in the written curriculum, with an increasing concern with equality, human rights and inclusion, often emphasizing children's well-being and in many cases citizenship; and seeking to respond to globalization and use opportunities presented by technological advances. There has been a strong trend towards greater political intervention and prescription, with frequent changes, often based on policy-borrowing from those jurisdictions perceived to be doing well, despite well-documented hazards in doing so.

Among key influences in setting the curriculum priorities above are international organizations such as UN agencies and the OECD. However, comparative assessments such as Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS) have led, in recent years, to greater focus on data and performativity. There is increased pressure on teachers, through high stakes assessment and accountability mechanisms, to improve test scores, leading to a greater emphasis, in the taught curriculum, on subjects to be tested and the marginalization of the arts and the humanities. There is uncertainty about the balance to be struck, in practice, between “academic” attainment and a broader sense of children's well-being and social, emotional and character/values development. This exemplifies one of many tensions to be considered in curriculum design in the primary years, in part, because education, especially in the primary years, has multiple, often-conflicting aims, making the idea of “what works” simplistic. Section 5 ends by listing seven tensions discussed further in Section 7.

Research in the developmental sciences starts by considering the research related to the structure, functioning and development of the brain. Neuroeducational researchers warn against too definite an interpretation of behaviours as related to these and applying their findings directly in the classroom, casting doubt on the value of many initiatives claiming to be based on brain research. Ethical implications related to informed consent and the equitable use of research findings are highlighted. The research indicates that learning involves a complex interaction of emotion and cognition, and of many non-conscious and conscious learning mechanisms. Neural networks, in different areas of the brain, are created, or pruned, throughout life, depending on how much they are used, emphasizing the brain's plasticity and the importance of repetition and habituation. The literature advocates the early identification of sensory or motor impairment, or difficulties with communication to enable remediation and normal development, where feasible; but argues against trying to accelerate development except in cases of developmental delay. Normal developmental processes require appropriate levels of nutrition, hydration, exercise and sleep. The role of chemicals in regulating brain function emphasizes that the level of stress should be sufficient to provide challenge but not so great that anxiety leads to “fight or flight” responses, which impair inhibitory and self-regulatory processes. The neuroeducational research provides more insight into learning difficulties, such as dyslexia and dyscalculia, the autistic spectrum and attention deficit hyperactivity disorder (ADHD), than normal learning processes; but it remains inconclusive on the causes and possible ways of remedying these difficulties.

Recent research from cognitive psychology provides a large amount of detailed work about children's learning, rather than overarching theories. The research tends to confirm the constructivist view on which the PYP is based, with young children able to understand more than was previously thought, given the appropriate environment and support. This reinforces that learners need to be active and engaged, that learning is reciprocal and social and that concepts are best learned by applying knowledge and skills in real, meaningful contexts. It emphasizes the role of a more experienced person helping to lead learning, especially for those less experienced

as learners, setting challenging, but realistic, expectations and providing modelling and feedback to reinforce appropriate behaviours.

The research suggests that in the 6 to 12 age range, children increasingly develop conscious learning mechanisms, with working memory (the processes used to store, organize and manipulate information temporarily) and retrieval from memory important elements in developing the concepts to engage in abstract and generalized thinking. These years are vital for children to learn consciously to understand their own and other people's emotions and behaviour, to develop intrinsic motivation and empathy for others since social conformity becomes increasingly important and attitudes towards other groups more fixed. While children must become increasingly confident users of language and use metacognition so that they are more able to reflect on, and regulate, their own learning processes, the research supports the value of continuing to use multi-sensory approaches. Some skills associated with learning to play a musical instrument and learning language, to do with grammar and accent (in an additional language), are best learned before the age of 12 or 13. Developing learning attributes and dispositions and a growth mindset, where children (and adults) recognize that success depends on qualities such as resilience and resourcefulness rather than inherent and unchanging intelligence, have increasingly been emphasized in recent years.

Main conclusions

This review concludes that the concept- and enquiry-led approach of the PYP is appropriate for the 21st century and broadly reflects current research on how children in the 6 to 12 age group learn best. The emphasis on the learner profile accords well with the need for children to develop attitudes, values and dispositions required for lifelong learning in a changing world.

A review of the PYP must take into account the context of globalization and the resulting greater mobility and diversity, the effects of social and cultural changes on children's lives and technological change. This highlights the importance of global citizenship and that children must be encouraged to be active makers of meaning and to exercise critical thinking and learn to live with uncertainty. The impact of technology is still uncertain, as it opens many opportunities for accessing and using information, but harbours dangers related to attention and how children can best use, and protect themselves while using, the internet.

Neither the neuroeducational research nor that in psychology suggests the need for significant change to the PYP, broadly supporting the constructivist principles on which it is based. It emphasizes the reciprocal nature of learning, the close link between emotion and cognition and the importance of using different learning mechanisms and means of representing experience, especially, but not exclusively, language. Given the importance of working memory, metacognition, self-regulation and intrinsic motivation, children in the primary years need a wide range of opportunities across the curriculum which encourage these and qualities such as independence, empathy, and resilience rather than relying on extrinsic factors such as reward and sanctions.

Tensions resulting from recent trends, influences and initiatives in the primary curriculum are best resolved by a curriculum based on educational values, aims, principles, as well as research, with these reflected throughout, as is the case with the PYP. This emphasizes the need for a broad and balanced curriculum where knowledge, concepts, skills and attitudes are taught together rather than discretely, and with adults modelling learning behaviours and where possible relinquishing control. Successful implementation depends on teachers having a deep understanding of the curriculum and its underlying principles, emphasizing the need for sustained professional development and a collaborative culture. Concepts and approaches such as growth mindsets,

“learning to learn” and updated understandings of feedback processes will help to provide a rationale for how the PYP's transdisciplinary pedagogical approach can best be implemented. More emphasis should be placed on generic approaches such as formative assessment and “visible learning” than on short-term and/or prescriptive initiatives. It is suggested that the PYP might include more emphasis on the role of religion, on procedural knowledge associated with specific (subject) disciplines and on children's rights. The IB should recognize that the pressure from external drivers such as high-stakes assessment and accountability mechanisms may militate against the broad and balanced curriculum, including significant experience of the humanities and the arts, which is appropriate for primary-age children.

This summary was extracted by the IB Research Department. A copy of the full report is available at <http://www.ibo.org/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:

Eaude, T. 2013. **Primary Education: a Literature Review**. The Hague, NL: International Baccalaureate.