

# International Baccalaureate Primary Years Programme: a systematic review

Journal of Research in  
International Education  
1–15

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DOI: 10.1177/14752409231188215

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## Abstract

This article arises from a systematic review of the International Baccalaureate (IB) Primary Years Programme (PYP). Four databases were consulted, and after the application of inclusion and exclusion criteria, 21 articles were selected and analysed in the following categories: year and author, country, type of research, participants, purpose and results. The results show a growth in PYP research in recent years, coming from several countries around the world, using mainly qualitative or mixed methodologies with small samples of teachers, students, administrators and families in IB schools. There is great variety in the purposes of the studies, the most representative being comparative analysis of the implementation of the programme, the use of a language for IB teaching other than that of the country in which the school is located, and the treatment of interculturality. These studies find differences in the ease of implementation of the programme depending on the context and geographical location of the schools, and also highlight the benefits of the programme for intercultural education and foreign language learning. Some tensions can be observed between the PYP curriculum and national policies, and also in the training and predisposition of teachers towards this particular methodology. More research is needed on the academic benefits of the PYP in comparison with other methodologies that are also working well at the curriculum level.

## Keywords

International Baccalaureate, international schools, education, teaching.

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## Introduction

### *International Baccalaureate: an educational approach for a globalised world*

The International Baccalaureate (IB), a non-profit educational foundation, was created in 1968 with the aim of facilitating the educational development of students who were highly mobile around the world, mainly due to the labour mobility demands of their families. Educational institutions, whether public or private, that want to be part of the IB work along four fundamental lines: the promotion of a global and intercultural vision among students, the possibility of integrating international methodologies within a national education system, the use of innovative methodologies in parallel with traditional ones, and the establishment of universal standards common to all IB schools (Tugluk, 2020). IB offers four educational programmes according to age: Primary Years Programme (PYP), Middle Years Programme (MYP), Diploma Programme (DP) and Career-related Programme (CP). All programmes seek to develop a common profile (IB Learner Profile) composed of ten attributes, to make students: inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced and reflective. These attributes enable students to be responsible members of local, national and international communities (IB, 2017).

Teaching in IB world schools (schools that offer one or more of the four IB programmes) is based on six broad and flexible approaches for teacher adaptation: enquiry as a key procedure for seeking information, understanding concepts and making connections between them, applying learning in both local and global contexts, teamwork and collaboration as a working structure, inclusion and attention to diversity, and meaningful, continuous and varied assessment (IB, 2017). Through these approaches, five interrelated skills will be developed that enable students to grow in autonomy, ask good questions, set effective goals and work towards them: thinking skills (critical thinking, reflective thinking and ethical thinking), research skills (contrast, validation, comparison), communication skills (oral, written, active listening, argumentation), social skills (positive relationships and conflict resolution) and self-management skills (time management, organisation, emotional management) (IB, 2017). As at 2021 there were 1,950,000 students studying in 5,484 IB world schools in 159 countries (2,667 state schools and 2,817 private schools) (IB, 2021c).

### *Primary Years Programme (PYP)*

The first IB programme to begin operating was the Diploma Programme in 1969, and it was not until 1997 that the IB Primary Years Programme (PYP) was introduced. Since that time, the PYP has been developing its own methodology and adapting it to the changes that have taken place in society globally and in the different countries in which the programme has been implemented. The development of technologies and communications, the growing importance of the mastery of foreign languages, and the demand for a global and open mentality towards the world have meant that this methodology has been growing, enriched and nourished by advances in the world of educational research (IB, 2021a). The main objective of the PYP is to develop enquiry skills in students between the ages of 3 and 12 through six interdisciplinary inquiry units planned for each grade (Tugluk, 2020). These six inquiry units are: who we are, where we are in place and time, how we express ourselves, how the world works, how we organise ourselves, and sharing the planet (IB, 2017). Each inquiry unit presents central ideas, key concepts, related concepts and lines of enquiry related to the central idea (Savage & Drake, 2016).

The programme focuses on development of the knowledge, skills, concepts, attitudes, enquiry skills and actions needed to function fluently in a globalised society (IB, 2021a). Students are agents and responsible for their own learning. Depending on the legal requirements of each country or region, the units of enquiry are developed transversally in a flexible curricular structure in which

each area of knowledge (science, mathematics, language, physical education or the arts, among others) contributes to the achievement of the lines of enquiry established for each moment. This transdisciplinary model is based on three pillars: the learner (what is learning?), learning and teaching (how best to support learners?) and the learning community (who facilitates learning and teaching?) (IB, 2021b). In many schools there are two types of primary teachers: classroom teachers and specialist teachers. Classroom teachers deal with the core elements of the curriculum, while specialist teachers usually teach subjects such as physical education or the arts. In each school there is a PYP Coordinator who is responsible, together with the teachers, for the supervision and development of the PYP Planner, the document that governs the development of the units of enquiry throughout the course. The PYP Planner first develops the cross-disciplinary theme, the central idea and the summative assessment (which consists not of traditional written tests, but of student productions in which the student evidences his or her learning after the inquiry unit). Secondly, key concepts, transdisciplinary skills, learner profile attributes and teaching strategies are selected (Savage & Drake, 2016).

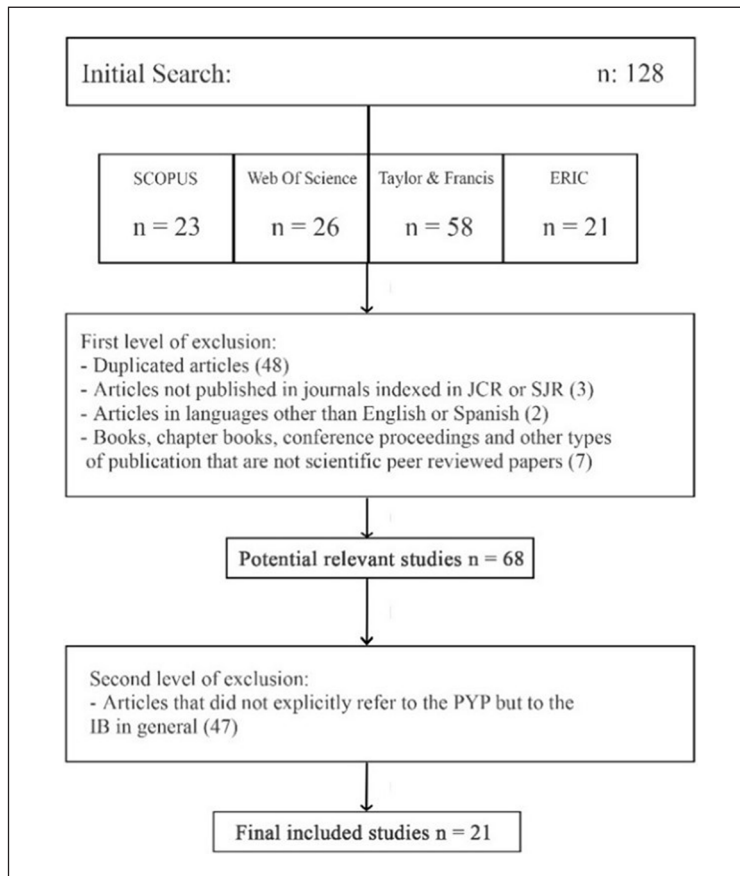
### *The expansion of PYP research in recent years*

The growth of PYP around the world in the last decade has encouraged researchers to begin exploring the effects of the programme in different domains. In New Zealand, a study found that students in IB schools performed better overall in elementary school compared to students from similar populations outside the IB system (Kushner et al, 2016). In Australia, there have been a number of studies in which IB students have been found to perform better in science (Campbell et al, 2014) or in reading and numeracy (Gough et al, 2014). Lester and Lochmiller (2015) found that nine out of ten students in PYP schools in Colombia were proud of their institution. However, these publications are either in books published by universities or edited by the International Baccalaureate itself, which makes it difficult to have a comprehensive, unbiased and scientific view on the subject. Publications in indexed journals are not abundant, and many of them deal with IB in general, without specifying a programme. Gürkan (2021) experimented in Turkey with transdisciplinary curriculum design with pre-service teachers emulating the collaborative curriculum programming work that takes place in IB schools. In the last five years, there have been several research studies analysing the implementation of IB in specific countries (Kidson et al, 2018; Leek, 2020; Suresh & Mahajan, 2021), the higher education trajectory of students who have studied in IB schools (Mack et al, 2019), or the role of teachers who teach in IB schools (Bunnell et al, 2020; Walton et al, 2016). The only systematic review conducted in this area, although not specifically on PYP but on IB in general, is the one conducted by Ben-Jaafar et al (2023) in which 295 papers published from 1967 to 2018 were analysed, with an emphasis on IB brand development, IB student academic success and IB international identity. The systematic review discussed in this article aims to fill the gap in the literature and showcase research published in international indexed journals specifically in relation to the IB PYP programme.

## **Methodology**

### *Search sources*

A systematic review was conducted of journal-based literature referring to PYP, even if the focus is not specifically about the PYP. In order to find existing publications, a search was initiated in four electronic databases: ERIC, SCOPUS, Web of Science, and Taylor & Francis. The descriptors 'International Baccalaureate', 'Primary Years Programme' and 'PYP' were used with the search



**Figure 1.** Flow diagram of the systematic review process.

operator AND. No year of publication restriction was introduced, with the oldest article being from 2003 and the most recent from 2021, the year prior to the review.

### *Exclusion criteria*

The exclusion criteria used were as follows: (1) Duplicated articles, (2) Articles not published in journals indexed in the Journal Citation Report (JCR) or the Scimago Journal Rank (SJR), (3) Articles written in languages other than English or Spanish, (4) Books, book chapters, conference proceedings and other types of publication that are not peer-reviewed papers, (5) Articles that do not explicitly allude to PYP.

### *Search limits and procedure*

First, the review was included in PROSPERO, an international database where reviews can be found on any topic. The search was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al, 2009), including the PICO strategy. The search ended on 22 December, 2021. Figure 1 shows the process from the

beginning of the search in the four databases to the selection of the final 21 articles that comprise this systematic review.

## Results and Discussion

The results are presented and discussed here according to the six categories of analysis used (see Appendix 1).

### *Author and year*

With the exception of the two papers by Bueno-Villaverde and Steffen (Bueno-Villaverde et al, 2018; Steffen & Bueno-Villaverde, 2018), no author in our search has published more than one article on the PYP. On the basis of our analysis, there are no researchers or research groups with a more or less long trajectory over time whose main line of research is this one. The oldest publication included in this review is Karnes & Nugent (2003), followed by Kauffman (2005) and Carder (2006). Therefore, after the emergence of the PYP programme at the end of the 20th century (Tugluk, 2020), it took a few years for the first peer-reviewed publications on the programme to appear. More than half of the publications are concentrated in the last five years, when the IB has undergone its greatest expansion worldwide (IB, 2021c).

### *Country*

In this category, publications are analysed by country based on the geographical location of the schools used in the sample, not the nationality of the authors or the country in which the journal that published the article is located. The country with the highest concentration of research is the USA, with four papers included in the review (Karnes & Nugent, 2003; Kauffman, 2005; Quaynor, 2015, Solano-Campos, 2017). They are followed by Turkey (O'Boyle, 2009; Güler & Yaltrik, 2011; Tugluk, 2020) and Australia (Law et al, 2012; Lebreton, 2014; Walsh & Casinader, 2019) with three publications each. Spain is represented in two publications (Steffen & Bueno-Villaverde, 2018; Bueno-Villaverde et al, 2018). The remaining countries have produced only one publication: The Netherlands (Roiha & Sommier, 2021), the United Kingdom (Ashley-Welbeck & Vlachopoulos, 2020), Canada (Walsh & Casinader, 2019), Uruguay (Bueno-Villaverde et al, 2018), Azerbaijan (Palmer, 2016), Colombia (Lochmiller et al, 2016), France (Lebreton, 2014) and Switzerland (Twigg, 2010). However, it should be noted that some papers sample schools from more than one country, either for comparison or for other methodological or researcher convenience reasons. As examples, the work of Walsh & Casinader (2019) is developed in schools in Canada and Australia, and that of Bueno-Villaverde, Steffen & Van Vooren (2018) in Uruguay and Spain. Finally, there are four articles that do not refer to specific countries, either because they are theoretical works without a sample of participants (Carder, 2006; Lüddecke, 2016) or because they use a sample from a multitude of countries around the world (Savage & Drake, 2016; Sperandio & Kong, 2018). This large global dissemination of PYP research is due to the striking expansion of the IB in recent years (Ben-Jaafar et al, 2023), reaching 159 countries by 2021 (IB, 2021c), although in most of them impact research has not yet been conducted on the process of implementing the programme and the results obtained. In the USA, for example, in 2003 there were only thirteen schools offering PYP (Karnes & Nugent, 2003). Eighteen years later, there were 614 (IB, 2021c).

## *Type of research*

Most of the articles included in the review (fourteen out of a total of twenty-one) use a qualitative methodology for the collection and subsequent analysis of data. One of the most commonly used data collection instruments is the semi-structured interview (Ashley-Welbeck & Vlachopoulos, 2020; Bueno-Villaverde et al, 2018; Sperandio & Kong, 2018; Palmer, 2016; Savage & Drake, 2016; Solano-Campos, 2017; Lochmiller et al, 2016; Quaynor, 2015; Law et al, 2012; O'Boyle, 2009; Güler & Yaltrık, 2011), and subsequently conducting a thematic analysis (Braun & Clarke, 2006) from which independent categories of analysis emerge (Sparkes & Smith, 2014). Focus groups are also used in two articles (O'Boyle, 2009; Sperandio & Kong, 2018), as well as direct observation by researchers of the development of classes in the different educational centres in which the research is conducted (Quaynor, 2015; Solano-Campos, 2017; Lochmiller et al, 2016; Kauffman, 2005; Palmer, 2016). Those investigations that include among their objectives knowing aspects related to curriculum design and school organisation have also used the analysis of the different documents that the school has made available (Bueno-Villaverde et al, 2018; O'Boyle, 2009; Karnes & Nugent, 2003). One article uses an ethnographic method for data collection and analysis (Roiha & Sommier, 2021) and another includes graphical representation as a method for obtaining information that would be more difficult to obtain in other ways (Ellingson, 2017) from teacher participants of some dilemmas they have encountered in enquiry processes with students (Twigg, 2010). Although less abundant, there is also some research that uses mixed methods combining both qualitative and quantitative techniques (Walsh & Casinader, 2019; Steffen & Bueno-Villaverde, 2018; Lebreton, 2014) which, as Creswell (2014) points out, allows the most appropriate technique to be selected depending on the objective sought without being limited by the selected methodology. The most commonly used quantitative analysis technique in these studies has been the participant survey, the results of which are treated statistically. There is only one study that uses a purely quantitative methodology, with a pre-test and post-test design before and after twelve weeks of a science programme intervention (Tugluk, 2020). Finally, there are two theoretical papers in which no data collection is carried out (Carder, 2006; Lüddecke, 2016).

## *Participants*

Just over a third of the articles collect data exclusively from teachers teaching in the PYP programme, with a sample of between ten and forty teachers (Roiha & Sommier, 2021; Ashley-Welbeck & Vlachopoulos, 2020; Walsh & Casinader, 2019; Lochmiller et al, 2016; Twigg, 2010; Steffen & Van Vooren, 2018; Güler & Yaltrık, 2011; Kauffman, 2005). Only the work of Tugluk (2020) uses exclusively a sample of students, in this case eighteen 5-6-year-olds. Law et al (2012) focus their research on information provided by students' families. The rest of the articles obtain data from different types of participants, adding to the students and teachers the perspectives of PYP Coordinators and school administrators (Sperandio & Kong, 2018; Quaynor, 2015; Savage & Drake, 2016) and even the students' families (O'Boyle, 2009; Sperandio & Kong, 2018; Bueno-Villaverde et al, 2018). Except for the work of Sperandio & Kong (2018), which obtains data from 122 IB schools in different countries around the world, the rest of the articles show the results obtained in a single school or in a small number of them, which is to be expected due to the qualitative typology of most of the studies, as they do not seek to generalise the results but to deepen the knowledge of the object of study, as pointed out by Sparkes & Smith (2014).

## Purpose

There is great heterogeneity in the purpose of the different papers included in this review. The works by Lebreton (2014), Bueno-Villaverde et al (2018), Solano-Campos (2017), Ashley-Welbeck & Vlachopoulos (2020), Lochmiller et al (2016) and Carder (2006) examine the integration of foreign language teaching within the PYP programme in enquiry processes in which fluid and deep communication takes place among students and with the teacher, which promotes the effective acquisition of communicative skills as pointed out by authors including Gibbons (2014) or Téllez & Waxman (2006). Roiha & Sommer (2021) focus their work on teachers' perceptions of interculturality in the PYP programme, in line with the work of Walsh & Casinader (2019), although in this case it focuses on the moral aspects of interculturality. Research by Quaynor (2015) and Palmer (2016) also deals with the issue of interculturality, immigration and citizenship education, which is one of the main objectives of the IB (IB, 2017). Tugluk (2020) tries to test the effectiveness of a twelve-week science teaching programme using enquiry as a methodological strategy. Steffen & Bueno-Villaverde (2018), Güler & Yalçırık (2011), Karnes & Nugent (2003) and Kauffman (2005) explore in their works the implementation processes of the PYP in different schools, as well as its strengths and weaknesses and the differences between schools, since as authors including Kidson et al (2018), Leek (2020) and Suresh & Mahajan (2021) point out, the context in which each school is located means that the implementation of the programme must be individualised and must address the particularities and needs of each school. Another theme included in the review is the establishment of professional learning communities through the involvement of organisations external to the school (Sperandio & Kong, 2018) which, following authors such as Thessin & Starr (2011), facilitate and encourage the creation and development of such communities. Savage & Drake (2016) explore transdisciplinarity in the PYP, as the disappearance of curricular subjects as independent and unrelated compartments is one of the hallmarks of the IB (IB, 2017). Lüddecke (2016), on the other hand, aims to reflect on the authenticity of education in PYP by drawing on different philosophical thoughts: Splitter's (2009) dialogical narrative, Taylor's (1991) ethics and Guignon's (2004) social virtue. Analysis of the objectives of each paper included in the review suggests there is a dearth of research focused on exploring the benefits of PYP over other curriculum designs in the learning of the content areas of the different national curricula, something that IB administrators themselves advocate as one of the strengths of the methodology (Savage & Drake, 2016; IB, 2021b), so much so that families of PYP students cite this academic excellence as one of the criteria for enrolling their children in IB schools (Law et al, 2012).

## Results

The diversity of topics covered in the articles reviewed, as discussed above, leads as a logical consequence to a wide variety of results associated with IB research and specifically with the PYP stage. Research related to the methodological management of foreign languages yields some very interesting results, such as the great potential of the use of augmented reality for language teaching because of the possibility of generating situations closer to the contexts of real language use, although the authors warn of the need for teacher training in these techniques for their correct use (Ashley-Welbeck & Vlachopoulos, 2020), the need to take into account the context of immigrant students for the use of bilingualism as one of the central axes of the research (Solano-Campos, 2017), the existing tensions between members of the educational community (students, families, teachers, management teams) when it comes to identifying the role and importance of the use of the foreign language in the educational process, and the need to perceive the usefulness that language learning can have not only in the educational context but also outside the school. It is also

important to promote the enjoyment of language learning (Lebreton, 2014) and the desirability of integrating the foreign language at all stages of IB and to reward this effort through foreign language certifications (Carder, 2006). These results reinforce those previously presented by authors such as Lucas & Grinberg (2008) and Gibbons (2014), who advocate the integration of second foreign language learning simultaneously with the learning of the different curricular contents.

The work of Roiha & Sommier (2021) shows the importance of initial teacher training in intercultural issues, as some teachers recognise their insecurity when integrating interculturality in the classroom due to a lack of preparation and training in this area, although they claim that it is essential to contribute to the comprehensive education of students, agreeing with authors such as Gorski (2006), Ogay & Edelmann (2016) and Piller (2017). On this same issue of interculturality, the work of Quaynor (2015) found differences in the approach to interculturality in the seven schools that participated in the study. While some teachers were very aware of cultural diversity in the classroom and used this fact as a tool for learning about interculturality, others ignored this reality. Palmer (2016) and Walsh & Casinader (2019), for their part, highlight the importance of working on interculturality and global citizenship through joint reflection processes and participation in awareness-raising dynamics based on authenticity and experimental evidence, since, as Reimers (2013) points out, we must go beyond the interpretation of the world in which we live and try to change it. Work aimed at analysing the results of PYP implementation in schools with a non-IB educational tradition shows the following findings: early childhood education teachers encounter more difficulties than primary school teachers in the application of elements such as key concepts, the use of transdisciplinary theme descriptors, and the Learner Profile (Steffen & Bueno-Villaverde, 2018), and the strengths of PYP are identified as student learning in multicultural issues and the facilitation of enquiry processes and the regulation of their own learning (Güler & Yaltrık, 2011), although like Kauffman (2005) they found difficulties in contextualising the programme in the country's legislative framework and in homogenising the key elements of PYP in different schools, something observed by Karnes & Nugent (2003) in their study conducted in the early years of PYP implementation.

Despite efforts to design a curriculum that can be applied in any school in the world, there are still cultural, political and contextual limitations as Alexander (2001) and Anderson-Levitt (2002) pointed out at the beginning of the 21st century. The work of Sperandio & Kong (2018) concludes that an external agency such as the IB can be useful and necessary for the creation of professional learning communities since, as Thessin & Starr (2011) point out, teachers must learn to build effective and enduring learning communities, for which they need leadership and structure that only an organisation with prior experience can facilitate. Savage & Drake (2016) show the importance of teachers having joint programming time to ensure that interdisciplinary work is coherent and well-structured. This interdisciplinarity is one of the key elements of PYP (IB, 2017) and has been shown to be an effective mechanism for integrating and applying learning without the rigidity of curricular subjects that sometimes limit the transfer of knowledge to real life situations (Canter & Brumar, 2011; Drake, 2012).

The work of Tugluk (2020) finds benefits in the application of enquiry mechanisms for science teaching compared to the use of more traditional methodologies, which is consistent with authors such as Özkan (2015) who points out some key elements for science learning such as observation, classification, prediction, inference, communication and measurement, all of which are included in the enquiry processes carried out in PYP. Law, McDowall & Feder (2012) note that the families of students enrolled in PYP do not have a deep understanding of the programme, with many of them acknowledging that they have enrolled their children without a thorough knowledge of the curriculum, although they claim to have been attracted by the quality of the teaching staff, the consistency

of the programme and the skills developed through the programme. Twigg (2010) stresses the importance of teachers' willingness to develop enquiry mechanisms with students, so it is essential to take this into account when recruiting teachers.

The work of Lüddecke (2016) identifies several elements of the so-called Educational Authenticity in the PYP programme, although he recommends emphasising greater student participation in the process of curriculum construction as pointed out by Davies, Mangan & Hughes (2009) and diversifying knowledge in the different curricular areas, following authors such as Fornäs (1995). Finally, O'Boyle's research (2009) on the perceptions of students who start the MYP stage after completing the PYP shows that they find the new stage easier because of the downloading of homework and the freedom they have to select tasks according to their preferences and abilities. As Noddings (2003) and Sousa (2006) point out, the quality of learning should not be related to suffering, but rather learning will be better when students feel emotionally secure, and this occurs when motivation and predisposition are positive.

## Conclusions

The analysis of the 21 papers included in the review has highlighted the rapid growth that IB schools in general and the PYP in particular have experienced worldwide in the last decade. No authors were found with a consistent line of research in this area, but most of them made a single contribution on PYP. Almost all of the papers are about research conducted in IB schools, with a predominance of qualitative methodologies, followed by mixed methods and lastly by quantitative research. The most commonly used data collection instruments are interviews and direct observations by researchers. The samples selected, being mostly participants in qualitative studies that do not seek to reach representative figures, are small and consist of students, teachers, school administrators and even families.


As for the purposes of the studies, they are very heterogeneous. Several of them are aimed at obtaining information on the use of the foreign language in the PYP and others at analysing the results of the implementation of the programme in schools in different contexts and geographical locations. There are several studies on the treatment of interculturality in the PYP. Other studies look at comparisons between schools, the analysis of families' knowledge of the curriculum, educational authenticity and the use of technologies in the enquiry process, among others. The results are equally heterogeneous, although they all point to the benefits of the PYP in areas such as intercultural work, citizenship education, foreign language learning, science learning and the development of initiative and self-regulation of student learning. Some tensions are shown between the IB curriculum and different national curricula, as well as in the training and dispositions of teachers working in such schools.

There is a gap in the literature in terms of studies that try to compare the academic results obtained in the different curricular areas in students studying the PYP and students from schools outside the programme, something that would be interesting in order to detect those beneficial aspects of the IB programme that can be replicated in other schools that use different methodologies. There is also insufficient research on the effects of PYP on the different subjects of the curriculum, something that could be addressed by expert researchers in the didactics of the different school disciplines such as mathematics, language, science, arts and physical education, among others. This review shows the need for further research on the IB in general and the PYP in particular, since the great expansion of this educational vision throughout the world in recent years has not been accompanied by similar levels of educational research relating to the benefits of this form of education at all levels.

## Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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# Appendix I

Author and year	Country	Type of research	Participants	Purpose	Results
Rolih & Sommier (2021)	The Netherlands	Qualitative research. Teacher survey.	11 PYP teachers	To examine teachers' perceptions and experiences of intercultural education.	Teachers consider intercultural education to be important for the future of pupils, but are insecure about its implementation. There is a demand for attention to be paid to initial teacher training.
Tugluk (2020)	Istanbul (Turkey)	Quantitative research. Pre-test and post-test after 12 weeks.	18 Pre-school children (5-6 years)	To investigate the effect of PYP on the acquisition of scientific skills.	Science scores improve for PYP students.
Ashley-Welbeck & Vlachopoulos (2020)	London (UK)	Qualitative research. Semi-structured interview.	8 PYP teachers	To explore the technological skills of foreign language teachers in PYP. To identify the challenges and opportunities of using augmented reality in foreign language teaching in PYP.	The use of augmented reality in foreign language teaching in PYP brings benefits, but it is a means and not an end in itself. It requires teacher training and careful selection of its use.
Walsh & Casinader (2019)	Canada and Australia	Mixed method. Online survey and semi-structured interviews. Quantitative and qualitative analysis.	38 teachers from 4 PYP schools	To examine the geographical morale of PYP teachers and explore the tensions, paradoxes and complexities in dealing with differences among students.	Work on interculturality in schools must be approached, accepting that all educational agents start from moral schemes that must be known, respected and discussed.
Steffen & Bueno-Villaverde (2018)	Spain	Mixed method approach comprising both a qualitative and a quantitative framework.	Teachers from 6 IB schools in three autonomous communities in Spain	To compare the differences in perceptions of PYP teachers in pre-primary and primary education.	Most of the early childhood teachers have encountered more difficulties in the implementation of PYP, except for the role of constructivism in the methodology.
Bueno-Villaverde, Steffen & Van Vooren (2018)	Uruguay and Spain	Qualitative research. Documentary analysis and participant interviews.	32 participants, including principals, teachers and parents	To analyse the integration of the foreign language in the enquiry programme of schools.	Substantial differences in the ways of solving methodological problems: how to include the foreign language in the unit of enquiry and the sequencing of language content, for example.
Sperandio & Kong (2018)	Worldwide	Qualitative research. Focus groups.	Administrators, teachers and parents in 122 PYP schools worldwide	To explore the effects of the intervention of external agencies in the establishment of professional learning communities.	External agencies are useful in the establishment and development of professional learning communities in IB schools.
Solano-Campos (2017)	USA	Qualitative research. Direct observations, focus groups and interviews.	Fourth-grade students in an IB centre with a large number of refugees	To analyse language ideologies in a school with a high percentage of immigrants with the PYP programme.	Although the school claimed to have language teaching as a key element, the particularities of refugee students coming from very diverse backgrounds have not been taken into account.
Palmer (2016)	Azerbaijan	Qualitative research. Direct observations and interviews with participants.	61 students, 16 teachers	To analyse citizenship education in a school with the PYP.	For a correct development of citizenship awareness, reflection, social research and dialogue must be promoted among students.
Savage & Drake (2016)	Worldwide	Qualitative research. In-depth interviews.	24 IB PYP participants (teachers, coordinators or administrators)	To explore the development of interdisciplinarity in schools with the PYP programme.	All participants appreciate the potential of interdisciplinarity, although there is a need for teachers to have teaching hours for coordination meetings where they can jointly develop the interdisciplinary units.
Lochmiller, Lucero & Lester (2016)	Colombia	Qualitative research. Classroom observations and interviews	19 teachers from five PYP schools	To examine the problems encountered in the implementation of the PYP programme in a Colombian population.	Resources are needed to address foreign language learning difficulties in populations with complicated socio-educational contexts.

(continued)

## Appendix I. (Continued)

Author and year	Country	Type of research	Participants	Purpose	Results
Quaynor (2015)	USA	Qualitative research. Classroom observations and interviews.	Participants included seven middle school teachers, two administrators, and 27 sixth-grade students from 11 different countries	To analyse the development of citizenship education in different countries.	There is a wide divergence in teaching practices from school to school and country to country.
Lebreton (2014)	France and Australia	Mixed research. Qualitative: Questionnaire to students and semi-structured interviews with teachers.	237 students aged 10-12 and 11 teachers	To investigate the perception of the members of the educational community regarding the use of the foreign language in the PYP programme.	Students are more motivated when they find usefulness and application in foreign language learning. It is necessary to clearly define the purposes of foreign language teaching for the knowledge of the whole educational community.
Law, McDowall & Feder (2012)	Australia	Qualitative research. Short questionnaire and five in-depth interviews.	51 families	To understand the mechanism for the selection of the PYP centre by the students' families.	Most parents acknowledge having very limited knowledge of the programme, indicating that the main criteria for the selection of the school are the quality of the teaching staff, the skills developed and the curricular consistency.
Twigg (2010)	Switzerland	Qualitative research. Questionnaires, narratives and images.	11 teachers	To understand the key elements for teachers in transforming their professional practices into those required by the PYP programme.	Teachers with high expectations, positive spirit and willingness to adapt to the requirements of the methodology are more likely to meet the requirements of the PYP.
O'Boyle (2009)	Turkey	Qualitative research. Questionnaires, focus groups, interviews, personal diaries and document analysis.	28 students aged 12 and their families	To examine the expectations and experiences of students who have moved from PYP to MYP.	Students have adapted easily to the new stage and acknowledge that they find the curriculum more accessible than at primary level because they have less homework and more freedom in the selection of homework.
Carder (2006)	Worldwide	Theoretical work based on IB bibliography and documents.	Theoretical work	To analyse the treatment of bilingualism in the IB.	The inclusion of foreign language learning at all stages of IB and the certification of language acquisition at different levels is proposed to encourage student motivation and to recognise their work.
Kauffman (2005)	USA	Qualitative research. Teacher survey and classroom observation.	All the teachers in the three schools surveyed	This article compares the International Baccalaureate Primary Years Programme (IBPYP) as implemented at three schools in the USA	Consistency is observed in the key components of the programme, although variations in practical implementation are identified, caused by the difference in contexts and the ambiguity inherent in the PYP.
Güler & Yalınk (2011)	Turkey	Qualitative research. Semi-structured interviews.	14 PYP teachers from 4 IB schools in Turkey	To present the PYP and suggest practical applications based on teachers' perceived strengths and weaknesses.	Teachers recognise as strengths the promotion of autonomous learning, the development of enquiry skills and intercultural work. On the other hand, they identify as weaknesses the difficulties they encounter in balancing IB curriculum requirements with the requirements of national educational legislation.
Liddecke (2016)	Worldwide	Theoretical work based on three contemporary philosophical models.	Theoretical work	To reflect on the authenticity of the PYP curriculum on the basis of different philosophical models.	The PYP programme has several elements aligned with Educational Authenticity, such as the community construction of knowledge, although greater student participation in curricular programming and the diversification of learning in different branches of knowledge are advised.
Karnes & Nugent (2003)	USA	Qualitative research. Questions to collect information about the educational institutions.	8 PYP centres in the USA	To obtain information about the curriculum and development of the first schools affiliated to the PYP programme in the United States.	The typology of schools, admissions processes, tuition fees and the specific requirements of the PYP programme in its first years of development in the USA are analysed.