THE INTEGRATION OF VERTICAL ALIGNMENT IN TEACHER COLLABORATIVE PLANNING IN THE INTERNATIONAL BACCALAUREATE PRIMARY YEARS PROGRAM: TWO QUALITATIVE CASE STUDIES IN EUROPE AND THE UNITED STATES

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Abstract

This qualitative research study aimed to answer the question, “How do IBPYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program Of Inquiry?” The International Baccalaureate Primary Years Program (IBPYP) provides no explicit content, external examination, or moderation and the Standards and Practices are intentionally left broad to accommodate all the International Baccalaureate (IB) schools. This contextual exploratory study investigated how teachers structured their curriculum with alignment in mind based on the guidance they received. Two case studies in a private international IBPYP school in Europe that followed the IBPYP standards alone and a publically funded national school in the U.S. that followed an additional layer of national standards sought to uncover the experiences and strategies the IBPYP teachers developed. Four themes emerged from semi-structured group interviews of K-5 classroom teachers: (1) Teachers’ assumptions about collaborative planning demonstrated that collaboration doesn’t just happen and requires pre-requisite structure and ability to deal with conflicts; (2) Teachers’ assumptions about curriculum and curriculum alignment revealed the perception that all teachers are responsible for curriculum alignment and disclosed some related barriers; (3) Teachers’ challenges in planning their Program Of Inquiry detailed the design steps and challenges. (4) Alignment processes and strategies summarized the perspectives and strategies used in schools, and the need for explicit IBPYP curriculum alignment guidance.

Keywords: Program Of Inquiry, collaboration, curriculum, standards and practices, curriculum design, curriculum alignment, IBPYP.
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Chapter One: Introduction

In the United States (U.S.), the No Child Left Behind Act of 2001 (NCLB, 2003), a modern version of the Elementary and Secondary Education Act (ESEA) of 1964, transformed the educational system by creating awareness of school and teacher accountability, and of the need to intervene at an expert level to add guiding standards to improve equity and student achievement. According to Conley and Ward (2009), the IBO did not until recently prescribe explicit IB Diploma standard statements. For long time, it relied on the “detailed specification of course aims and goals, along with its end-of-course assessment system to create a high degree of internal consistency” (p. 3). In the absence of content standards and external examinations, it is essential to understand the existing structure of the IBPYP, which relies on teacher collaboration to design and align the curriculum, knowing that the level of competence changes from teacher to teacher and between schools. The International Baccalaureate Primary Years Program (IBPYP) is a curricular framework for students between 3 and 12 years old, which was initially designed for international schools but is now adopted by national schools in different countries. This study compared the application of the PYP framework in two different settings where the IBPYP standards and the additional local standards were used and described how the teachers aligned their curriculum in these contexts.

The IBPYP Curriculum Framework

In order to understand the IBPYP framework, a brief introduction to its philosophy and components are touched upon in this section. The purpose is to clarify the written guidance teachers have about the PYP holistic curriculum that makes meanings through personal connections; the concepts and values behind the curricular structure; the culture; the assessment approach; and the standards that address the alignment.
According to the IBO (Programs, 2015), the IBPYP was established as an IB program in 1997. It is part of a continuum of four self-contained programs from early childhood to pre-university age. The IBO allows schools to implement any of the Primary Years Program (PYP), the Middle Years Program (MYP), and the Diploma Program (DP), including the IB Career-related Certificate (IBCC) in the schools with the DP Program. The schools are expected to create an articulated sequence between the primary, middle, and high school.

The IBPYP definition of curriculum is general and inclusive. According to the IBPYP guiding document *Making the PYP Happen* (IBO, 2009), “The school’s curriculum includes all those student activities, academic and non-academic, for which the school takes responsibility, since they all have an impact on student learning” (p.8). It includes the process of design, implementation, assessment, and review of teaching and learning. The PYP curriculum has three components: the written curriculum (what do we want to learn?), the taught curriculum (how best will we learn?), and the assessed curriculum (how will we know what we have learned?). They form an integrated curriculum, which is defined by Beane (1997) as a curriculum constructed around personally and socially significant problems based on learning experiences related to common themes that cross subject barriers. The PYP follows a transdisciplinary integration approach, which organizes the curriculum around student questions (Drake and Burns, 2004) and teacher driven inquiry. Through this interconnected framework, the curriculum is expected to be accessible to all students, whose experience in learning is supposed to be consistent independent of the teacher in charge (IBO, 2009).

**Holistic Curriculum**

The IBPYP prescribes a holistic curriculum framework based on five essential elements: knowledge, concepts, skills, attitudes, and action. These elements are taught and
assessed through six transdisciplinary themes that have global significance, explore the commonality of human experiences, and are supported by the knowledge, concepts, and skills from the traditional subject areas. The IBPYP philosophy refers to the importance of acquiring skills in context and exploring content that is relevant to students and goes beyond the borders of the traditional subjects. Boyer (1995) stated, “To be truly educated, a student must also make connections across the disciplines, discover ways to integrate the separate subjects, and ultimately relate what they learn to life” (p.82). The transdisciplinary themes are taught through teacher-guided inquiry in the context of Units of Inquiry (UOI) that address concepts framed in central ideas that differ with the themes and the grade levels. Each grade level starting in Kindergarten covers six UOI per year rotating around the following concepts: Who We Are, Where We Are in Place and Time, How We Express Ourselves, How The World Works, How We Organize Ourselves, and Sharing The Planet. The IBPYP approach advocates the principle “less is more” (IBO, 2009, p.9). Therefore, the transdisciplinary themes frame a “highly defined, focused, in depth programme that eliminates redundancy and avoids the pitfalls of a personality-driven curriculum” (IBO, 2009, p.9).

The collection of the UOI forms the Program of Inquiry (POI) that is collaboratively built by the teachers at all levels of the elementary school. The Program of Inquiry is documented on a matrix built around the six-transdisciplinary themes running horizontally, and the students’ age groups running vertically. This allows a quick check of the balance of subjects covered by theme, the key concepts, the central ideas, the related concepts, and the lines of inquiry taught throughout the curriculum. The conformity between the written and the taught curriculum, the vertical and horizontal alignment of the Program of Inquiry, and the collaboration at different levels, are critical parts of the IBPYP curriculum.

**Concept Driven Curriculum**
The PYP provides a curricular framework to accommodate the integration of different national educational systems. The set of key concepts used to build the curriculum have universal significance “regardless of time or place within and across disciplines” (IBO, 2009, p.74). The concepts are: form (what is it like?), function (how does it work?), causation (why is it like it is?), change (how is it changing?), connection (how is it connected to other things?), perspective (what are the points of view?), responsibility (what is our responsibility?), and reflection (how do we know?).

These concepts drive the PYP curriculum planning in a flexible way under the form of broad open-ended key questions that allow the inquiry to develop with no limits on breadth of knowledge or depth of understanding (IBO, 2009). The IBO believes this “provide(s) access to every student, regardless of particular aptitudes” (IBO, 2009, p. 17). The PYP places equal value on transdisciplinary social, communication, thinking, and research skills. The aim is to help students not only comprehend the concepts, but also communicate and interpret learning through application, analysis, synthesis, and evaluation in a dialectical way. These multiple aims contribute to the complexity of evaluating the program. Such an intricate developmental approach process with no pre-defined sequence of concepts-building that leads to a deeper understanding and ability to apply complex concepts in real-life situations is challenging to assess.

**Values-laden Curriculum**

The aim of the IBO curricula is to develop internationally minded students. The IBO describes international mindedness as “people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world” (IBO, 2009, preface). The IBO mission statement describes their aim as “to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect” (IBO, 2009). This is achieved through
highlighting the IB Learner Profile, the expected Attitudes, and the Action components of the curriculum. Therefore, the IB Learner Profile teaches the students to be inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced, and reflective. These characteristics are assessed and documented along with the attitudes the students should demonstrate towards people, towards the environment, and towards learning. The students are taught the importance of the following attitudes: Appreciation, commitment, confidence, cooperation, creativity, curiosity, empathy, enthusiasm, independence, integrity, respect, and tolerance that are interpreted and modeled by the teachers. The PYP inquiries should promote these attitudes, which culminate in the students using their skills, values, and knowledge to initiate individual or group ‘Actions’ to help the community and demonstrate responsibility and maturity. The IBO considers the Actions “the most significant summative assessment of the efficacy of the programme” (IBO, 2009, p. 26).

Culture

The IBO has created a continuum of structure between their four programs based on the IB Learner Profile in the center and international mindedness on the external periphery. The IBO philosophy promotes the centrality of the learners who use inquiry to develop and execute learning goals, pre-assessment of knowledge to connect and build on students’ experiences, the action component to stimulate awareness of social, economical, and global responsibilities, and collaboration to encourage distributed leadership and inclusive decision-making. The structure and philosophy are consistent across IB schools, which facilitates acculturation and adaptation to the IBO’s Eurocentric Western culture (Drake, 2004).

The IBO describes international education as “develop(ing) citizens of the world in relation to culture, language and learning to live together” (IBO, 2013). It aims, through education, to create a more peaceful world where developing intercultural understanding will
instill respect and caring. Kauffman (2005) suggested that IB values may have various interpretations in different schools or cultures and schools may adapt them to their needs. The IBO’s mission statement summarized their position; “These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right” (IBO, 2010).

**Assessment**

Ideally, the collaborative planning throughout the school involves input from students, and the application of the three parts of the curriculum - written, taught, and assessed- in an iterative manner. In the PYP, this is done through teacher reflection and the different forms of student assessments: pre-assessment of prior knowledge, continuous formative assessment to reinforce learning, final summative assessment to report achievement, self and peer assessments to encourage reflection.

Teachers use alternative assessment methods, formal and informal, that consider the developmental stages and learning problems of their students. According to Fleege (1997), these alternative assessment methods allow broader use of the results, not to rank students, but to provide them with support. Two research studies by Phelan, Choi, Vendlinski, Baker, and Herman (2011) and Black and William (1998a) showed contradictory results on the improvement of students scoring as a result of the use of formative assessment. The first reported that intervention as a consequence of formative assessment led to greater improvement for the higher scoring students, while the second showed greater gains for the lower achievers.

It is imperative to document the types and content of assessments because assessment is one of the three pillars of curriculum alignment (Anderson, 2002). Assessment in the PYP is designed to inform practice and give feedback to the parents, administrators, and students. It is linked to concepts not contents. Conley and Ward (2009) mentioned in their IB
standards development and alignment project that the IB Diploma Program is at a disadvantage if they do not create course content in order to compare “apples-to-apples” with state standards or college readiness standard systems. However, at the PYP level, content is not prescribed because it changes from school to school, and assessment is globally linked to concepts, knowledge, skills, the learner profile, attitude, and actions.

The IBO described the assessed curriculum in “Making the PYP Happen” as a way to provide data on the quality of the learning process, the quality of the students’ understanding of the central idea, and on the outcomes of the learning in terms of breadth and depth of students’ responses to the lines of inquiry (IBO, 2009). It should cover the five essential elements and be aligned with the IBO and school assessment policy. Since assessment is not linked to a content standard, the teachers holistically assess the progress and the development of the child, and the changes in his attitude. Teachers document evidence of the academic progress through portfolios that allow self- and group-reflections and goal setting. Pollard, Triggs, Broadfoot, McNess, and Osborn (2000) recommended that summative assessment be carried out without a high profile to avoid leaving a negative impact on the students. The teachers’ overall reflections at the end of the UOI should lead to adjustments in the program to improve student experiences.

According to the IBO, they purposely refrain from setting external examinations or moderation of grades at any PYP level and do not encourage the use of standardized achievement tests (IBO, 2013, p. 50). However, they do not prohibit PYP schools from using commercially available tests or different local, state, or national standards along with their own. Schools (teaching staff and administrators) are required to write their own assessment policy that reflects the purpose, the tools, and the understanding behind it, and to share it with all stakeholders. The assessment policies are context sensitive and broadly related to the standards and practices set by the IBO.
Standards and Practices

The IBO has designed a common set of broad standards and practices that apply to the PYP, MYP, IBCC, and DP in all IBO authorized schools around the world. They have added specific requirements for each program to guide the planning, implementation, and evaluation. The schools are invited every five years to conduct a self-study process based on matching the requirements of the standards to the onsite practices that leads to the re-authorization. At the end of the self-study, the IBO visiting team that comes to verify the facts presented in the self-study gives commendations and recommendations for improvement. IBPYP-trained practicing teachers from different schools form the visiting team members. Their role is to help the school to identify areas that need attention in order to maintain the quality and philosophy claimed by the IBO. Knowing that the schools operate under different circumstances, the IBO stated that they are “aware that for each school the implementation of an IB programme is a journey and that the school will meet these standards and practices to varying degrees along the way” (IBO, 2011, p. 1).

The standards and practices relate in general to the IBO philosophy and its expectations for schools. The three sections of the standards document cover the philosophy, the organization, and the curriculum of the school.

The alignment of the curriculum is mentioned sporadically without setting guidance or criteria for evaluation. One standard considers collaboration and reflection as one step and it states:

Collaborative planning and reflection addresses vertical and horizontal articulation.

a. There is a systematic approach to integration of the subject-specific Scope and Sequences and the Programme of Inquiry.
b. The school ensures balance and articulation between the transdisciplinary Programme of Inquiry and any additional single-subject teaching” (IBO, 2011, p. 25)

Another standard states; “The written curriculum is comprehensive and aligns with the requirements of the programme(s)” (p. 27). For the PYP, the second part of the requirement adds, “The school ensures that there is a coherent, horizontally and vertically articulated programme of inquiry” (p. 27). In addition, the documentation of the planning is supposed to be organized in a Scope and Sequence document that groups all the planned inquiries in content and skills by subject area. Additional requirements reflect this and combine the alignment and the assessment in an implicit way:

4. The written curriculum identifies the knowledge, concepts, skills, and attitudes to be developed over time.

a. The school has Scope and Sequence documents that indicate the development of conceptual understanding, knowledge, and skills for each Primary Years Programme subject area.

b. The overall expectations of student achievement in the school’s Scope and Sequence documents are aligned with those expressed in the Primary Years Programme Scope and Sequence documents (IBO, 2011, p. 27)

The alignment is often linked to the requirements of the programs, derived from the practices of the standards, which are broad and independent from the specifics of what is taught, how it is taught and assessed, or the results of assessments. It is often linked to the learner outcomes in terms of skills acquired based on students’ developmental stages. Therefore, one practice which states, “Assessment at the school aligns with the requirements of the programme(s)” refers to the pedagogic practices, not the rigor of content and assessment.
At the grade level, the planning teams are generally encouraged to achieve a balance between what the specialized teachers plan and the inquiry program intended for the year. The specialized teachers would pick some of the learner outcome goals of the Units of Inquiry and work collaboratively with classroom teachers to cover all the objectives of the units. At the whole school level, the IBPYP aims at creating connected experiences for the students. Hence, IBPYP invites schools to refine the Program of Inquiry by balancing each year level with the following and previous one to ensure both horizontal and vertical articulation.

**Problem Statement**

Schools in the U.S. follow state-mandated curricula and must administer standardized tests to evaluate student learning (Corsi-Bunker, 2013). Some also follow the national Common Core State Standards, which are based on pre-defined standards for content (Corsi-Bunker, 2013). The IBPYP operates under a different philosophy. The IBO offers a framework of skills by age and subject, and transdisciplinary themes, but refrains from setting examinations or moderation of grades at any PYP level (IBO, 2013). The IBO provides six transdisciplinary broad themes and delegates to the teachers the freedom to design their school curriculum.

The vertical alignment in content and skills at the school level is only vaguely defined in the IBPYP written documents, which causes challenges and variations in the way it is applied. In the absence of alignment criteria and the guidance of explicit IBPYP standards, the planning for developmental inquiry-based learning forms a challenge for the IBPYP teachers.

The alignment of content to skills in inquiry-based curricula often reveals uncertainty and tensions (Goodchild, Fuglestad, & Jaworski, 2013) that affect what teachers want to teach their students. Alignment challenges and processes used during the planning phase
both in independent IBPYP schools that lack content standards and external examination, and in publicly funded American IBPYP schools with state content standards and benchmarks require investigation.

**Purpose Statement**

The purpose of this research study was to explore how teachers structure a curriculum and how they consider alignment based on their understanding and the guidance they received. Curriculum alignment is the alignment across lessons, subject areas, and grade levels to avoid academic gaps and organize learning (*Glossary of Educational Reform for Journalists, Parents, and Community Members* (2014)). This research sought understanding of the challenges, decision-making, and alignment mechanisms the teachers used during their collaborative curriculum design meetings. The aim of this research was two-fold: 1) to explore how IBPYP teachers address curriculum alignment during their collaborative planning, and 2) To outline the strategies used by schools that follow the IBPYP standards alone, and those that have another layer of state standards that set their curriculum.

**Justification of the Research Problem**

The collaborative planning of a curriculum in the PYP schools is based on classroom teachers’ agreement on common plans that they have the freedom to execute using inquiry. Based on teachers’ background, experience, and knowledge, the level of depth and the significance of the activities may fluctuate from one classroom to another. When teachers across the grade levels come with different expectations and lead overlapping Units of Inquiry, it is likely to cause gaps in the curriculum. Teaching the concepts of matter or life cycles, for example, could be addressed at different depth levels where teachers may decide to put limitation on what to teach based on their judgment of students’ cognitive maturity and the strengths of their own knowledge in the subjects. Gaps may emerge if the depth of coverage, the content, and the learner objectives are not structured from grade to grade.
These gaps may consequently trigger some dissatisfaction at the higher levels of the school where teachers have expectations of students’ knowledge, or end up with recommendations at the reaccreditation phase from the IBO to align the curriculum.

At the school level, the IBPYP encourages the promotion of curriculum coordinators from within the school and recommends training them on the job, which creates discrepancies in the expertise available to the teachers compared with schools that hire professionals. This fact, added to the looseness of the IBPYP standards, the alignment guidance, and the absence of external moderation of students’ achievement, raises questions about the processes and challenges the teachers face in designing sequenced phases of learning based on a continuum of content and skills that are linked to instruction and assessment.

**Justification Backed by Research**

Research indicates that the application of inquiry in schools is challenging mainly because of the discrepancy between teachers’ understanding of inquiry and the way they experience it in their classroom (Argyris and Schon, 1974). According to Skinner (1954), learning is the accumulation of knowledge in a sequential and hierarchical manner. The combination between the discrepancies in the quality of teaching, the lack of sequential cognitive structure in the different Units of Inquiry (UOI), and the vague guidance in content across the elementary school could be problematic. Students may not understand, for example, how the sound travels in matter if they were not introduced to the structure of atoms in liquids, gas, or solid objects.

A qualitative cross case analysis conducted by Inoue and Buczynski (2011) to observe pre-service teachers leading inquiry-based lessons after one week of training reported that teachers face many challenges related to content knowledge and structure. They found three “stumbling blocks” related to planning the inquiry, adapting to students’ input, and the delivery of the lesson. Davis and Simmt’s (2006) research about mathematics in-service
teachers pointed out another challenge of understanding how subject content, curriculum map, and classroom situations connect to enhance understanding. The demands on the PYP teachers to master the content knowledge of all areas of the curriculum, understand the pedagogy, and map their lessons are compounded with curriculum alignment. Cochran Smith (2003) observed that the multiple demands placed on educators limit the teachers’ attention to the development of program curriculum and policies. These difficulties are exacerbated by the fact that the IBO’s only standardized test is at the Diploma or Grade 12 level; too late to remediate learning gaps at student level and curricular flaws at school level. Williams, et al. (2009) confirmed, “By necessity and design, each of the six components [UOI] must be integrated for a program to function effectively. This is easier to do on paper than in practice” (p. 133).

**Deficiencies in the Evidence**

Research coverage of inquiry-based learning is abundant, but hardly any is relevant to the impact of IBPYP collaborative planning of a Program of Inquiry on curriculum alignment. Twig (2010) focused on the IBPYP teachers’ transition from traditional to inquiry-based teaching with a focus on the impact of beliefs, values, and knowledge on the transition to the new system. Cowie de Arroyo (2011) covered the transition from PYP to Middle Years Program (MYP) in a K-12 school in Colombia where students experienced decrease in academic achievement and behavioral issues; Kaufmann (2005) explained the implementation of the IBPYP in three schools in the USA; Ketelhut and Dede (2006) covered assessing inquiry learning and the importance of using alternative methods of assessment in addition to a more traditional multiple choice test, while Hemelt (2015) discussed the impact of the PYP on student performance in Michigan and North Carolina. A research study conducted by Hallinger, Walker, David, and Lee (2011) analyzed a global survey of IB coordinators in 175 international schools offering both the MYP and the Diploma Program
They studied the challenges of the transition between the MYP and the DP and confirmed the concerns of 87.1% of the MYP coordinators about the need to develop the published MYP vertical and horizontal articulation documents, but hardly any alignment research covered the PYP.

Research in the area of curriculum alignment involved studies at the DP level related to the transition to higher education and the need to satisfy universities’ admission requirements in different countries and the investigation of the alignment of the DP courses with local curricula. A study conducted by Ga Young Shin (2012) in South Korea discussed the tension between national and IBDP curricula. It pointed to the debate regarding the IB content, perspective, and cost of the programs and noted the criticism that the IB curricula content is culturally biased and is in conflict with both the national curricula and the university entrance exam in South Korea. Another study tackled the alignment of the IBDP with the Australian curriculum (Dixon; Charles; Moss; Hubber; & Pitt, 2014). It focused on mapping the curriculum documents in four discipline areas of mathematics, science, English, and history and compared the conceptions of curriculum. Conley and Ward (2009) compared college readiness standards or state educational standards in the U.S. with the IBDP standards. They pointed to the importance of creating content standards at the DP level and used a professional judgment convergent consensus model to describe the development process the IBO followed in creating DP curricular standards.

The IBO expected their schools to meet their “Standards and Practices” to varying degrees (IBO, 2010); yet, very few research studies looked into how schools are using these standards, how the inquiry-based planning is impacting the curriculum alignment, or what alignment strategies are used by the IBPYP schools.

**Significance Statement**

By researching teachers’ understandings of alignment and their practices in light of
the existing IBPYP framework, researchers, teachers, administrators, students, and the IBO will benefit from the reflection on the challenges and the strategies that support the alignment process at the teacher level.

**The Research Field**

Research supports knowledge and looks into current practices with the aid of theories. Eisner (2001) reminds us that all research and reform efforts intend to “rationalize” the practice and performance of schools. This research sought to inform the field about an unexplored problem in IBPYP schools. It may add clarification to the literature on education in international schools and the question of alignment in the IBO schools at the elementary school level.

**The International Baccalaureate Organization**

This research studied current practices in light of the available IBO frameworks and standards to draw a summative conclusion that would suggest changes or additions to the IBPYP framework. Van der Schaaf and Stokking’s (2011) research study explored the validation of content standards to teaching where 25 experts supported the need to collaborate and use a systemic approach in order to reach a consensus. The IBO imposes teachers’ collaboration in their standards, which has become part of the IBPYP curriculum design stage. Exploring the processes employed in a naturalistic setting could reveal what occurs and provide the IBO a view into a grey area of concern to teachers and schools. As they work relentlessly to improve their system, the IBO may reflect on the alignment models used by the schools to extend their support in the areas of alignment and curriculum development.

**The Teachers**

In conceptual terms, the study invites teachers to change their thinking and break the “nice to do” pattern and look at designing lessons according to a wider perspective of the curriculum as a whole. Noddings (1992) mentioned the challenges teachers face with the
switch from the traditional subject-oriented education, and its promise of bringing equality of
opportunities to all students, to more student-centered approach. By recognizing the
challenges of designing child-centered inquiry-based curricula, the teachers would profit
from adding more structure (Lam, Alviar-Martin, Adler, S. A., & Sim, 2013). This research
could help teachers reflect on different systematic approaches used to enhance the
sustainability and accountability of the curriculum.

The Schools

At a strategic level, the schools would benefit from understanding the gaps that occur
during the flexible design and implementation of an inquiry-based curriculum. Kumar (2013)
called for implementation of the process of self-reflection and self-inquiry as a medium to
create consciousness that leads to change. He contended, “change is possible only when
educators can begin to look at curriculum in the context of consciousness” (p.xii). When
schools become conscious of teachers’ struggles and learn new alignment strategies from
other schools, they may recognize the need to plan targeted professional development
sessions for their teachers and, possibly, to adopt a monitoring system to check the alignment
of their curriculum.

The Students

In Bebb’s (2004) study that addressed the problem of learning through inquiry, one of
the findings was that “some students struggled with the unstructured nature of inquiry-based
learning” (p.147) and they wondered whether they had “covered” the subject sufficiently.
The research concluded that there is a risk of superficiality in learning. Addressing
curriculum alignment prevents gaps in what is taught, offering students a developmentally
appropriate continuum of content and skills. In addition, various research studies have
demonstrated that alignment increases student achievement (McGhee and Griffith, 2001;
DiBiase, Warren, and Wagner, 2001) and reduces the impact of socioeconomic status and
gender on student performance (Wishnick, 1989).

**Research Questions**

This research will use Walker’s (1971) procedures of curriculum development to understand how teachers address curriculum alignment at the planning phase, and the strategies IBPYP teachers use to ensure vertical alignment in skills and content in the separate Units of Inquiry they compile collaboratively to create a comprehensive curriculum.

In order to investigate the culmination of separate UOI into an articulated curriculum, the study investigated the following lead and subsidiary questions:

How do IBPYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program of Inquiry?

1) What assumptions do teachers have about collaborative planning in the IBPYP?

2) What assumptions do teachers have about curriculum alignment?

3) What challenges do IBPYP teachers have in planning their Program of Inquiry?

4) What alignment processes are practiced in the IBPYP schools?

**Positionality Statement**

My experience as a parent of students at IBO schools initially attracted me to teaching and pursuing a career in education. The inquiry-based teaching and learning, the respect for the students and their engagement in their learning, and the fact that teachers design content away from prescribed books that are used from year to year gave me a sense of achievement as a teacher and I became a fan of the method. However, I found this to be challenging to many teachers and I often questioned the structure and tools available to support them. My concerns fed my interest in conducting this study.

According to Royce (1999), inquiry combines theories, concepts, methods, and
evidence to provide a complex form of understanding. Teachers using inquiry-based curricula face many challenges designing age appropriate lessons, linking activities to concepts and assessing core knowledge and skills. These challenges make investigating the strategies they use to deliver a comprehensive inquiry-based curriculum an interesting area of research.

Some researchers investigated ways to assess teachers’ preparedness to teach inquiry lessons, such as Goldston, Dantzler, Day, and Webb (2013) who used the “5E Lesson Plan” rubric to evaluate inquiry-based teaching, my interest is to study the alignment of the POI from the social construct of collaborative planning.

The determination to carry out this study was inspired by a combined curriculum re-alignment recommendation of the Council for International Schools and the Middle States Association to one of the schools with which I was familiar. The self-study imposed by these two accreditation associations for international schools revealed vertical curricular misalignment in content and skills and documented teachers’ dissatisfaction at different levels of the school. This aroused my interest in studying the strategies IBPYP schools use to monitor the planning of the UOI to ensure their vertical alignment throughout the K-5 curriculum.

Potential Biases

In investigating how the content is built in the PYP program and how it might affect curriculum alignment, it is crucial to understand my dominant culture to avoid judging others based on my own pre-conceptions. According to Briscoe (2005), “one always brings one's history, experiences, and categories to bear when trying to understand new situations” (p. 25-26). Having studied and worked in Europe, absorbing certain values and perceptions, this may distort my interpretation of the experiences of “others” in different parts of the world. Therefore, I have asked clarifying questions and payed attention to the neutrality of the
interpretation of results.

The Projection of my Own Experience

I witnessed new teachers who joined the PYP system in private international schools struggle to define and design integrated content and to stay focused on the concepts and skills they were to teach. I had conflicts with colleagues because I asserted the need to cover a wider and more in depth content while they thought the students were not ready. I sought to revisit skills and content in different contexts while some considered this a waste of time. I reflect here on my eligibility and neutrality in representing my colleagues or the PYP teachers in this research. Based on Briscoe’s (2005) claim that, “the oppressed group should be researched and represented exclusively by the members of that group” (p. 23), an inclusive approach would give a better understanding and interpretation of the research findings.

My experience from within the group might affect the way I designed my research and the expectations I had. When research practitioners have negative or positive experience in the area they decide to research, they may expect similar results from their research. Foucault (1980) warned of the risk based on the idea that those in power (in the system) may operate to maintain the power (preserve the system). Pre-defined research designs, recorded data, and enlarging the scope of research on IBPYP schools in the U.S., which answer to an additional layer of standards and accountability, should aid in preserving the neutrality and credibility of the research.

Conclusion

My positionality towards the need to research how IBPYP teachers align their curriculum stems from my experience in the field. I reflected on my views and biases and applied a systemic approach that sets strategies, such as keeping records and widening the circle of the number of participants, to increase reporting quality and the validity of the research. The early acknowledgement of my personal prejudice and biases alerted me to
avoid involuntary biased preferences, like targeting novice teachers who are most likely to experience problems in designing UOI. Machi and McEvoy (2012) warned, “If these attachments [biases] remain embedded and unidentified, the research will be severely compromised” (p.19).

With this case study research, I hoped to bring objective attention to the struggle that some IBPYP schools experience in trying to align content and skills from grade to grade. My ultimate goal was to articulate explicit strategies for curriculum alignment in different IBPYP schools. I relied on surveys, pre-defined semi-structured questionnaires, and remained objective, which is hoped to have limited my personal impact on the participants.

**Research Paradigm**

For this qualitative study, the interpretive paradigm was used. Creswell (2013) related qualitative case study to the interpretive paradigm in which the research problem addresses “the meaning individuals or groups ascribe to a social or human problem” (p. 44). This study endeavoured to highlight the different experiences that IBPYP teachers have with the Program of Inquiry and alignment so reality could be apprehended and measured imperfectly in a postpositivist-interpretive approach (Maxwell, 2005). Postpositivism recognizes the influence of the researcher on the researched and allows the emergence of multiple realities. The epistemological belief underlying this study is that personal experiences and knowledge are multiple, and context bounded. The interpretive framework was based on the postpositive philosophical assumption that relies on teachers’ experiences in different schools to reflect different realities in a naturalistic approach. Mujis (2010) observed that in the postpositivist paradigm, researchers are not totally objective and disinterested observers; rather, they attempt to describe phenomena to the best of their ability.
Theoretical Framework

According to Morse and Richards (2002), interpretive research helps the researcher weave together the problem, research questions, and analysis as a cohesive whole. The research questions are context-dependent and rely on teachers’ understandings and experiences that could be best investigated through qualitative exploration of what teachers think and do in different schools. The axiological belief is that the individual values are influenced by the collaborative planning and were inductively viewed to understand the group perspectives in each school.

The concept of teacher collaborative planning drives the IBO assumption that teachers can design an articulated curriculum. Matthews and Hudson (1994) developed a “collaborative review of teachers planning” model that defines essential steps to enable teachers to evaluate their collaborative work in relation to school plans and broader national or state frameworks. The model addressed global steps that included identifying the teachers’ daily tasks, objective self-review of their efficiency, planned classroom observations, appraisal discussions, and reflection that leads to organizing collaborative plans. Walker (1971), on the other hand, used a naturalistic framework of teachers’ planning stages to unfold the practices that occur during inquiry planning. The naturalistic framework focuses on the recognition of teachers’ beliefs; the struggle to balance individual, group, and systemic requirements; and the elements that go into the decision to take actions. This research used Walker’s framework of the stages of teacher naturalistic collaborative planning to understand their actual practices and to facilitate comprehension of how teachers decide what goes into the curriculum and how they consider alignment.

Walker (1971) undertook research with aims similar to those of this study, to understand how teachers planned their curriculum, and he observed the different stages of their process. From a descriptive perspective, he developed a process framework that
portrays what curriculum planners do, in practice, when they have no prescriptive model of curriculum design to follow. His three-step process of “platform-deliberation-design” suggests that grade level teachers come to the discussion table that he calls the “platform,” from different backgrounds, and with certain beliefs, perceptions of the tasks and problems, and their own preferences for procedures.” This step lays the ground for the next stage, “deliberation,” in which the teachers – who may not have reached an agreement – must move forward beyond personal beliefs to discuss possible courses of action. This processing stage involves practical debate that identifies facts and objectives, generates alternative ideas, considers consequences, and weighs costs. At the end of this stage, the teachers identify the challenges of development and implementation they foresee. At the “design” phase, the group reaches consensus about beliefs, problems, and implementation issues, and makes decisions about the course of action.

Figure 1 summarizes how Walker’s model facilitates the understanding of this study. The arrows in this model reflect the levels of interactions between the different factors. The IBPYP curricular framework is the mold that shapes the curricular direction the schools take. The double-headed depict the mutual exchange between the parties, in which the IBPYP provides guidance and feedback, and the schools sign up for professional development, send feedback, and requests. At the second and third levels, the schools and the teachers have mutual interactions in which they discuss policies, practices, and goals. Since the teachers plan their curriculum collaboratively, they have an important role in the design and consequently, it is essential to address their planning phase to understand how they decide on choices in the curriculum leading to the alignment of the Program of Inquiry’s content and skills. The arrows linking the teachers to Walker’s (1971) model are iterative from Stage 1 to 3 but a dotted line indicates that some teachers may start at Stage 2 or still use their beliefs and assumptions even though the group decides differently. The double-headed arrow
between the third stage and the alignment reflects that the aligned document could be revisited. Every five years, the IBPYP uses the accreditation standards to evaluate the program and recommendations are sent to schools to adjust their program. A double-headed arrow links the curriculum alignment to the school for internal evaluation, feedback, and reporting the school remediation actions.
Figure 1. Vertical Curriculum Alignment based on Walker’s (1971) Model of Curriculum Planning
Chapter Two: Literature Review

This literature review focuses on three elements that encapsulate the essence of this research: the concept of curriculum, teacher collaboration, and curriculum alignment. The way schools may define curriculum and the historical context in which a curriculum was designed reflect the implication of its philosophy. The first two sections of this chapter, “Defining Curriculum” and “Curriculum Evolution,” address the different ways the curriculum is perceived. They situate the IBPYP philosophy in the world of education. The IBO’s belief in teacher collaboration leads to the investigation of collaborative planning as a tool for planning curricula. Section 3, “Collaborative Planning,” elaborates on the importance of Walker’s (1971) collaborative planning concept and discusses the challenges perceived during collaboration. Section 4, “Curriculum Alignment,” puts emphasis on the different meanings and strategies that experts use to achieve the challenging task of aligning two or more components of the curriculum. Some challenges expressed in the literature were be brought to the surface and models of curriculum alignment were synthesized to find the commonalities in the strategies used. Some methods used by teachers were explored and put in perspective with the IBPYP framework. The review of the literature concluded by examining the research conducted on the question: how do IBPYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program of Inquiry?

Defining Curriculum

According to Phenix (1962), curriculum is a term that some people associate with content or courses of study to be mastered, while others define it holistically to include learning experiences and teaching strategies (Taba, 1962). It may be linked to an organized structure or a curriculum plan for instructing in a specific context (Goodlad, 1994, 1998, Weinstein and Fantini, 1970) or systemic and dimensional (Eisner, 1991) to include behavioral, structural, pedagogical, and evaluative components. A curriculum could be
associated with goals and objectives (Bloom, 1956, Krathwohl, Bloom, & Masia, 1964, Harrow, 1972) to provide precision that would guide planning instruction and assessment.

Bobbitt (1924) defined curriculum in two ways:

1) It is the range of experiences, both indirect and direct, concerned in unfolding the abilities of the individual, or 2) it is a series of consciously directed training experiences that the schools use for completing and perfecting the individual (p. 10).

These definitions evoke the curriculum as an experience and as a product.

Perspectives on curriculum evolved to incorporate issues of accountability and structure. Saylor and Alexander (1974) considered the curriculum as a “plan for learning” (p.6) while Tanner and Tanner (1995) pushed for outcomes: “Curriculum is concerned not with what students will do in the learning situation, but with what they will learn as a consequence of what they do. Curriculum is concerned with results” (p.67).

With post modernism, the preference for non-planned sets of experiences for children emerged. The linear form of sequenced plans became less structured, allowing diversity and consideration of contexts. According to Wiles and Bondi (1998), curriculum became synonymous with setting goals and adhering to values that are activated through a process concluding in educational activities for students.

The IBO’s definition of curriculum is constructivist and reflects the contemporary vision of student centrality and bringing learning outside the borders of the classroom (IBO, 2009). The IBO encourages their students across the world to become active lifelong learners. They encourage their students to ask questions and use inquiry based learning to find the answers. Hence, the organization’s vision of a curriculum involves “all student and teacher activities that impact learning and for which the school takes responsibility” (IBO, 2009). The definition includes the process of design, implementation, assessment, and review of teaching and learning. The schools participating in this research embraced the IBO
philosophy.

**Curriculum Evolution**

In the Foreword of the “IB and the Common Core State Standards” (CCSS) for Mathematics, Drew Deutsch, the former director of the IBO Americas, referred to the IBO standards as one of five international benchmarks against which the CCSS were compared (IBO, 2013). He reported that over one million IB students from over 140 countries were attracted to this rigorous program, which was designed to satisfy the needs of international students to start university studies in various areas of the world. He added that the IBO drew from the best practices in the field of education around the world to build the Diploma Program. This is an example of historical patterns of curriculum philosophies that result from the socio-economical trends in the episodes of the development of society. The IB program was designed for international students who moved between countries, but became a program the national systems could adopt and a philosophy best suited to current educational needs of building critical thinking and problem solving.

Every curriculum has a background that is related to the history of the institution, their philosophical beliefs, and to the values of those who sustain it (Faas & Friesenhahn, 2014). According to Walker (2003), “knowledge of history and traditions enables the curriculum professional to spot similarities of current or proposed practices to older ones, see how events and trends shape curriculums and curriculum work, and gain perspective on current curriculum issues” (p.22).

Visions and values of teachers about society, students, knowledge, and education drive the judgment and actions that shape the curriculum. According to the postmodernists, curriculum ideals are socially constructed and are created by social groups to support the society in a certain time and place (Slattery, 1995). Terry Eagleton defined postmodernism in 1977 as a movement of thought that rejects objective knowledge and the unity of truth
Curriculum development involves questions and debates that reveal the values that Wiles and Bondi (1998) call “educational philosophies or learning theories.” They offered a historical repertoire to justify their theory that the curricular purposes emerge from people’s needs and affect the systems in society. For example, in the early days of the American society, the settlers taught the Bible with the purpose of preserving their faith and warding off evil. The Old Deluder Satan Act (1647) resulted in creating schools for that purpose. The need to develop “literate citizens” capable of participating in the growth of their countries and the birth of the concept of “participatory democracy” led to the creation of many schools in America.

The emergence of new ideas about children and learning in the late 18th century and early 19th century in Europe led to the creation of curricula that reflected these ideologies. Jean-Jacques Rousseau (1712-1778) promoted the creation of a controlled environment to facilitate children’s natural positive growth and interest, which is expected to enhance their innate good character. The principles of “learning by doing” and “educating the whole child” originated with Johann Pestalozzi (1746-1827) and evolved to include the principle of respecting the child’s developmental phases with Friedrich Froebel (1782-1852) and Jean Piaget (1896-1980). This philosophical trend was embraced by the progressive education shaped by John Dewey (1859-1952). He emphasized the importance of experience, the development of the mind, and the centrality of the learner in the process of teaching. Dewey’s ideas were the seeds that led to the IBPYP philosophy.

The highly structured curriculum ideas found in Tyler’s (1949) linear approach, which rotates around learning objectives, evolved from Johann Herbart’s (1776-1841) ideology of influencing children’s minds by building specialized subjects and systematic lesson plans that impact the society rather than the individual. This approach was revisited in the creation of
The Curriculum by Franklin Bobbitt (1918). These traditionalists believe in a sequential curriculum based on grade levels that is coupled today with performance appraisals and accountability systems.

Today’s era of technological and scientific prosperity has created urgency in the U.S. to reinforce science, technology, engineering, and math (STEM) education in schools. According to code.org (2014), a software developer in the area of computer science, 1.4 million computing jobs will be needed by 2020, which is equivalent to an opportunity to create $500 billion in income. Unfortunately, only 400,000 computer science students will be available. The trend in curriculum is to follow social and economical pressure. In education, the U. S. is currently shifting the focus from reading to the promotion of math and science, critical thinking, and problem solving.

The IBO Model

The IBO advocated for curriculum to evolve to include the above-mentioned STEM skills necessary in the 21\textsuperscript{st} century (IBO, 2013). According to Peterson (1972), in this fast developing world, “knowledge, in the sense of information, is nowadays obsolete almost before it is acquired” (p.35). Therefore, the content that is learned is not as important as learning to learn and understanding methodology.

The IBO vision of curriculum became a tool of empowerment of the mind. Peterson (1972) estimates that IB students and teachers would develop new “ways of thinking which can be applied to new situations and new presentations of facts as they arise” (p.40). The IBO promotes the understanding of the methodology of individual subjects and the development of the skills related to these subjects while providing a general conceptual framework from which to operate (Peterson, 1972). The IBPYP curriculum applies a transdisciplinary approach where the barriers between subject matters are dissolved to integrate different subject areas within the Units of Inquiry. This evolution in the design of
The IBO’s “Programme Standards and Practices” (IBO, 2010) recommends the use of collaboration and reflection to support the implementation of the program. The IBO standards are described globally, leaving the responsibility of developing processes to address collaboration and alignment to the schools. A research study by Connell (2010) who explored the implementation of the IB program in Prince Edward Island confirmed that collaboration is an enabling factor that supports the development and implementation of the program. Another dissertation study by Saa’d Aldin (2014) warned about the challenge of following the IB Diploma collaboration and reflection standards and the confusion in the implementation the teachers face.
The IBO considers the two processes of collaboration and reflection as interdependent, and treats them as a single process that is practiced regularly and systematically. In the view of the IBO, this process of collaboration and reflection addresses vertical and horizontal articulation, ensures that all teachers have an overview of students’ learning experiences, and incorporates differentiation for students’ learning needs and styles. This process is informed by assessment of student work and learning, recognizes that all teachers are responsible for language development, and addresses the IB learner profile attributes (IBO, 2010, p. 3). Teachers, for example, meet to plan the UOI, discuss activities and student interactions, students with special needs, assessment, and at the end they reflect on the success of the unit and recommend ways to improve it.

**Constructivist Collaboration**

The constructivist approach emerged in the 1970s as a reaction to psychological research studying the role of the individual and its influence on his understanding of the world (Little and VanTassel, 2003). The constructivists believe that reality is constructed in the mind of the individual according to his prior experience; hence, they value the multiple perspectives approach that collaborative planning offers teachers. Von Glasersfeld (1991) posited that constructivism “asserts two principles: (1) knowledge is not passively received but actively built up by the cognizing subject; (2) The function of cognition is adaptive and serves the organization of the experiential world, not the discovery of ontological reality” (p. 31).

Piaget (1972) asserted that constructivism is not a theory of learning, but a theory of development through predictable stages that increase in complexity; while Bruner (1985) considered it also as a model of learning where the learner’s construction of knowledge is often accompanied by new ways of seeing things. In collaborative meetings, teacher may learn on the job or grow from novice to professional thinkers in the area of curriculum.
Constructivist collaborative planning helps teachers to debate views, which promotes openness to new perspectives. An IBPYP study of the perceptions of International Baccalaureate Primary Years Programme teachers on factors influencing their development as PYP educators conducted by Cook (2015) reported that collaboration and “learning on the job” were the most influential factors on teacher professional development. Therefore, teachers’ collaborative planning enhances and develops their abilities.

During curriculum planning, ideally, teachers may discuss students’ developmental stages, the depth of content, and the appropriate implementation strategies, which enlarge their spectrum of knowledge and consideration. Brooks (1986-1987) warned, “Curriculum development and delivery from a constructivist perspective is a highly complex, idiosyncratic endeavor” (p.66). He added, “The success of constructivist approaches to curriculum development and delivery is contingent on the thoughtful mediation of the teacher” (p.66). A lack of level of experience in teaching in IBPYP schools and a lack of training in collaborative planning could be detrimental to a teacher’s ability to handle individual students’ needs, groups’ inquiry-based lessons, the collection and use of proper resources, and the global requirements of curriculum alignment.

The IBPYP adaptive curriculum opposes the creation of the same curriculum worldwide to transmit homogeneous knowledge. The IBPYP framework was developed to reflect school needs and build on teacher experiences. Therefore, standardized interactions were replaced by collaboration and adaptation. The IBO has mandated the inclusion of collaboration in the school schedule to ensure regularity in teacher meetings as one of the accreditation requirements. They endeavored to avoid imposing their dominant culture by not prescribing a curriculum at the primary school level, which could lead to homogenization and assimilation of prescribed knowledge (De C Tavares-Silce and Pessanha (2012)).

The IBO imposes collaborative planning as a way to value teachers’ experiences,
build on their principles of being compassionate and open-minded, and recognize diversity. Ideally, effective teacher collaborative planning stems from trust and results in teachers thriving as social life-long learners. A collaborative environment, as identified by Bouchamma and Michaud (2011), includes four components that allow learning: by experience, by doing, by belonging, and by learning to become. A constructivist collaborative environment allows the collaborators to grow and share the power of decision making with their administration (Northouse, 2010; Fullan, 2010).

Rorty (1979) defined collaboration as a dialogue in a structured social context where the members are treated equally and are guided by the same code of values. Bruffee (1984) addressed collaboration as a learning tool that affects the context without changing the core. Others addressed collaborative planning as a constructive activity (Cacciamani, 2010; Hellsten, Prytula, Ebanks & Lai, 2009). The IBO agrees with Bruffee’s (1984) view of education as a social construct that is acquired through conversation and interaction. Reflection and conversation are related causally and functionally. According to (Bruffee, 1984), “thoughts are internalized conversations” (p. 639). What teachers learn one from another in a social context is reflected in the conversations they hold. Consequently, these conversations allow learning to take place in a naturalistic way. In other words, learning to think is linked to learning to converse and exchange knowledge in a social setting, which IBO calls collaborative practices.

**Collaboration Challenges**

Collaborative planning enhances collegial practices, which, according to Hargreaves (1994), “take teacher development beyond personal, idiosyncratic reflection, or dependence on outside experts” (p. 186). IBPYP teachers design and align their curriculum within the structure of the school. The training and the published documents they receive often guide the outcomes of their planning. Their collaboration, though
originally contrived, is expected to become a school culture embedded in teachers’
behavior. Hargreaves (1994) clarified two types of collaboration. In the first, which
Hargreaves called collaborative cultures, “spontaneous, voluntary, development-oriented,
and predictable” (pp. 192, 193) collaborative practices are natural, flexible, and non-
coercive. The second type of collaboration Hargreaves described, contrived collegiality,
is “administratively regulated, compulsory, implementation-oriented and predictable” (pp.
195, 196). Based on the positive outcomes of collaboration, Morse (2000) suggested
imposing collaboration as an educational reform such that rejecting it is not an option.
Although some skeptical theorists like Hargreaves doubted the idea of contrived
collegiality and promoted voluntary collaboration, research showed that when the threat
of judgment is removed, teachers do benefit from contrived collaboration (Lam, Yim, &
Lam, 2002; Williams, Prestage, & Bedward, 2001).

Regardless of the kind of collaboration, Bruffee (1984) warned about some pitfalls in
collaborative planning and recommended the creation and maintenance of an academic
environment that facilitates social and intellectual engagement in educational development.

Culture. One challenge for the collaborators is to be open-minded to other cultures
and beliefs. Theoretically, collaboration allows the participants to construct knowledge
instead of adhering to a constant knowledge (De Lisi, 1979). The culture of teacher isolation
within the walls of their classroom (Gottesman & Jennings, 1994) prevents the teachers from
learning from others or getting friendly feedback that enhances their self-reflection on their
teaching. A collaborative school culture must be purposely built and nurtured; it then
becomes embedded in the artifacts, assumptions, beliefs, and practices that shape the
members’ attitudes and behaviors (Schein, 2010).

Collaboration and sharing information have become a culture in the work field and
the education systems are paying increasing attention to similar skills as those promoted by
the IBO. Shin (2012) discussed in his doctoral dissertation the IB influence on internationalizing the curriculum in South Korea secondary schools. Although he praised diversity in international education as a key to geographical, cultural, and social mobility (Bourdieu, 1989), he warned about the effect of western perspectives on the local culture and value systems in schools. He agreed with Paris (2003) that the pressure on graduates to enter the job market is turning internationalism into globalism. Companies are steering education towards uniformity of skills and knowledge through certification and licensure requirements. Therefore, students are obliged to integrate into the dominant system if they choose to look for opportunities broader than their local culture. Collaboration may not be appreciated by some Asian cultures (Drake, 2004), for example, but teachers and students adhere to it once they choose to join the IB system.

Paris (2003) says, “globalization occurs when there are impositions of ideas involving a dominant-recessive relationship, while internalization occurs where ideas are shared, utilized, agreed upon, and mutually accepted” (p. 235). This dilemma of adopting a school culture that leads to successful implementation of a program and the challenges of preserving teacher and student cultures is a thin line that has provoked discussions about the acculturation that is taking place in the IBO schools (Wylie, 2008). Many concerned voices in the United Nations International School highlighted the Euro-centric content in the DP and argued that the IB has to include “broader and genuinely international curriculum content” (Fox, 1985, p. 65). Other voices were apprehensive about the homogenization of culture and questioned the benefits of globalizing the teaching of Learner Profile in all IB schools. A study commissioned by the IBO conducted by Rizvi et al. (2014) looked at the tension between diversity and uniformity in applying the IB Learner Profile (LP) and recommended “robust conversations about the ways in which meaning and significance of the LP can be locally interpreted and implemented, without compromising on its core aims (p.v).”
Another divide, between the views of Hill (2006) and Peterson (2003), reflects an additional scope of discussions on culture between scholars. Hill (2006) considers national curricula as culturally biased toward the countries’ own cultures and it should not be compared with the IB program that fosters international understanding. Peterson (2003) conversely asserts that opening to an IB education, which is unavoidably Euro-centric, is a choice schools make to satisfy students’ needs to enter Western universities in Europe and the United States. Students in the IB program are encouraged to learn about their culture and mother tongue but also to become familiar with varied cultures with a wider spectrum of respect and tolerance of others in the world, and they are exposed to transnational lifestyles (Rizvi et al., 2014).

Trimbur (1989) discussed the transition that takes place during collaboration as a process of “reacculturation” of the participants (teachers and students) who go through crises of identity and authority and learn to build a provisional language to reach out to the other members of the community. To achieve an effective level of collaboration, reacculturation should take place within a structured context that respects the participants’ culture and the promotion of awareness of the requirements of the new culture.

Gumuseli and Eryilmaz (2011) conducted a research study to measure the realization rate of collaborative school culture and the impact of types of school on culture in six different types of schools in Turkey. They concluded that intentional creation and reinforcement of collaborative school culture were behind the schools that demonstrated positive collaborative relationships. In a research on 21st century skills practices and programs, Oretta (2012) found that “collaboration was so prevalent and key to the success of the school that it came to have an impact on the culture of the school” (p.53). The degree of teacher adherence to the collaboration culture of the school and the program it offers impacts the level of success of that school (Oretta, 2012). The research added that cohesion with the
school culture is the result of compounded efforts and support of the instructional leadership, the principal’s fidelity level to the IBPYP, and the open positive communication and feedback system in the school.

**Structure.** Another challenge for collaborators is following a process or a protocol. Rorty (1979) suggests that collaboration is a structured activity where the participants set conventions of how to contribute, argue, or critique in a rational way that makes sense to all the participants. Putting participants together with their peers with little guidance and structure may cause negative effects such as lack of focus (Nelson, Deuel, Slavit, and Kenedy, 2011; Shultz-Jones, 2011), lack of effectiveness (Wells and Feun, 2008), the dominance of the leader (Garmston, 2007), intimidation, or conformity (Roberts and Nason, 2011) that lower the participants’ learning quality. The IBO delegates the function of setting processes and protocols to the collaborative efforts in schools, which results in variations in perceptions, strengths and weaknesses, and practices between schools.

Structure guides the effectiveness of collaboration by encouraging communication, setting clear goals, and participating by sharing knowledge and thoughts. The construction of knowledge, as Rorty (1979) argues, is built on a process of collaboratively justifying beliefs by challenging each other’s assumptions and biases. Therefore, in structured collaborative planning there is no absolute knowledge or a correct track but a continuous negotiation through which the participants build the plans of their actions.

**Productivity.** Collaborators face another challenge: producing results. The problem of inefficiency is also related to teachers’ different perceptions and levels of training. Drago-Severson (2009) drew one analogy that addresses the distinction between discussion and dialogue, which often take place during meetings. She explained that discussion is about pressing one’s opinion, while dialogue “is the art of thinking together and looking at some issues together” (p.154). Teachers may come to the collaboration meetings with different
understandings of their roles, the levels of concession they are willing to make, and their willingness to learn from others, which requires dialogue to resolve their differences.

Collaboration in planning and teaching require structure because collaboration is not a natural behavior and requires intellectual, interpersonal, and training efforts. Thousand, Villa and Nevin (2006) recognize common issues that hinder the efficiency of collaborative planning. These include a lack of planning time for collaboration and communication, not recognizing the workload collaborative planning imposes on teachers, and the limited support of the school management. Other issues the authors identified include the lack of explicit support and training in collaboration strategies; the deficiency in setting collaboration goals; the negligence of developing a common language and team rules; the ambiguity of accountability and responsibilities; and the absence of evaluation of success in collaborating (Thousand, Villa, & Nevin, 2006). Collaboration implies reciprocity in relationships and must be demonstrated at all levels of the organization to become institutionalized in individual practices.

**Walker’s (1971) Collaborative Model**

This research acknowledges the cognitive and social aspects of collaborative planning. It uses Walker’s (1971) curriculum design model to investigate how collaboration works and how (through this process) teachers address alignment. Walker (1971) designed a negotiation stage in his model where teachers plan collaboratively. He admitted the importance of discourse that leads to effective collaboration. His first stage, “Platform” invites teachers to join in to discuss and even argue about their beliefs and values. The first stage addresses building consciousness of the teachers’ differences and similarities. Searby and Tripses (2011) approved the concept behind this stage. They thought that reflection “facilitate[s] the search for new perspectives and solutions to problems, [and] raises unconscious thoughts to the conscious level” (p.3). Borrego and Newswander, (2008) and
Nelson, et al. (2011) insist that this would happen only if the teachers are ready to confront their epistemological strengths and weaknesses in order to learn. Roberts and Siegle, (2012) added the factors of respect, genuine listening, and sharing, while Datnow, (2011) called for devising rules to guide the discourse.

In the second stage of “Deliberation,” the participants move beyond their personal beliefs to contribute to the possible course of action without eliminating their differences. Schwab (1969) described it as the stage where teachers generate alternative solutions “not the right alternative, for there is no such thing, but the best one” (p. 20-21). Huang-Yao and Shu-Ping (2010) observed that this process of collaboration and reflection improves group dynamics and Cacciamani, (2010) considers it as a constructive learning activity where knowledge is built and connected through teacher interactions.

The last stage of the collaboration is “Design,” in which the teachers make decisions and take actions based on their common goals. Borrego & Newswander (2008) asserted that “truly interdisciplinary collaborations require some effort on the part of collaborators to understand and appreciate the contributions presented by various disciplinary frameworks” (p.124). The efforts include the balance in the design of contents and the spiral consideration of the integrated disciplines and their skills.

Collaboration as a process and as a pedagogical tool is increasingly used to differentiate the schools that opted for participatory approaches to include teachers and students as active partners in the school education system. However, in order to gain credibility; knowledge, training, and guidance should be provided by the schools in the areas where collaborative teachers are expected be reliable and successful. Teachers who meet to collaborate may view curriculum alignment differently, often lacking the tools or strategies to tackle the process of alignment (Van der Schaaf and Stokking, 2011). Although they are supposed to learn and support one another, applying technical processes and creating models
remain a challenge even for the experts.

**Curriculum Alignment**

Curriculum shapes national identities and it transmits common heritage between generations. Compulsory schooling helps to shape a national character, stresses on particular values related to the economy, history, social behavior, and institutional interests (Wiles and Bondi 1989). Curriculum work is often done at the institutional level that directs and controls the work of teachers. The national or state authorities influence the selection of textbooks and curriculum materials. They design processes that follow specific requirements for advancement from one level to the next and set examinations to collect data and assess students’ learning.

In the IBPYP system, teachers do not follow prescribed textbooks but may follow the local curriculum guides, like IBO schools in the USA. The teachers are curriculum innovators who may invent new curriculum materials and activities that fit their students’ needs. They may invent new rhyming songs, new vocabulary games, technology-based activities, and critical thinking strategies. Teamwork at grade level and across subject areas leads to curriculum development that shapes the school’s curriculum overall. When state departments are in charge of the curriculum, specialists and professionals use their experience to design legislation that is subject to hearings and debates. Private independent international IBPYP schools manage their systems internally with the support of their teachers. Reaching curricular agreements is a tough task in democratic systems because different schools of thoughts have different priorities.

Schools that adhere to Noddings’ (1992) ideas about the priority of caring adopt a broader curriculum than the strictly academic one. Those that adhere to Gardner’s (1995) ideas about multiple abilities widen their curriculum to include equally visual, spatial, musical, literacy, and numerical skills. Therefore, individual schools should demonstrate
compatibility between their design and philosophy. The independent IBPYP schools that have freedom in curricular matters face the obligation to coordinate among teachers and among curricular components, such as assessments, standards, depth and breadth of content, and the instructional strategies. The coherence between grade level programs can be a big challenge for them.

Some authors, like Sykes (1990), call for empowering teachers to keep dominance and accountability over the curriculum. He claims this approach is “more successful than bureaucratic accountability” (p.84). He believes that if teachers have adequate time to plan collaboratively, attend professional development, have resources and informal leadership opportunities, they will reform the curriculum in a lasting, substantial way.

**Definitions of Curriculum Alignment**

Curriculum alignment, articulation, balance, or coherence are terms used interchangeably to refer to what the *Glossary of Educational Reform for Journalists, Parents, and Community Members* (2014) defines as,

An academic program that is (1) well organized and purposefully designed to facilitate learning, (2) free of academic gaps and needless repetitions, and (3) aligned across lessons, courses, subject areas, and grade levels (p.1).

Faas and Friesenhahn, (2014) conducted two research studies in Switzerland and Germany to align the IB Diploma content with the requirements of the German and the Swiss curricula. They described the concept of alignment “as the degree to which the different elements of an education system interact functionally and effectively to facilitate successful student learning” (p.6). Alignment would be reflected in the standards, assessments, instruction, expectations, cognitive skills, and learning materials. When the term refers to vertical alignment, the logical sequence of knowledge and skills should prepare the students for more complex tasks requiring pre-knowledge and the pre-existing necessary skills.
The term alignment is used in a variety of contexts and must be precisely defined as a relationship between distinct elements (Squires, 2005). The term has become multidimensional in the educational systems (Faas and Friesenhahn, 2014). It has many possible usages, and might describe policies, reform strategies, educational model, or other concepts. According to Case and Zucker (2008), vertical alignment is “the alignment of different parts of an entire education system” (p.4). An example of this is the standards and assessments that must be consistent to facilitate teaching of subjects from grade to grade.

Squires (2005) found alignment an essential feedback system used to “improve the effectiveness and efficiency of the school system” (p.7). Others have described it as a tool to standardize education with the purpose of creating educational quality and equality (Glossary of Educational Reform for Journalists, Parents, and Community Members, 2014).

The Challenges of Curriculum Alignment

According to Walker (2003), the same curriculum plays out differently due to differences in context, people, interests, and more. The IBO declared their tolerance in accepting differences in the implementation of their framework between schools and countries. The task of development and alignment of a transdisciplinary curriculum is time consuming, challenging, and requires skilled, committed teachers. Although some experts encourage an emphasis on teachers as key participants in curriculum reform and implementation (Darling-Hammond, 2009; Lucas, 2005), others warn of the challenges related to designing integrated curricula (Lam et al., 2013). Some of these challenges are discussed in the following subsections.

Lack of knowledge. Classroom teachers in the PYP cover many subject areas and cannot be experts in all. To be able to align a subject range requires depth of knowledge of all related concepts and skills. The schools may use published guides like the list of topics shared by the Third International Mathematics and Science Study (TIMSS), which collects
data on the mathematics and science achievement of U.S. based students compared to students in other countries, but the task is multi-directional involving different levels of assessment and skills for implementation. Teachers come to IBO schools with different backgrounds and education and learn the philosophy and practices through onsite or IB professional development sessions. The integration of multiple subjects within one unit of study is already a challenge that impedes many teachers (Lam et al., 2013). Another challenge is the knowledge of ordering and sequencing content and skills, which Walker (2003) sees as a necessity. Walker (2003) defined curriculum as “a particular way of ordering content and purposes for teaching and learning in schools” (p.5).

**Lack of time and willingness.** Squires (2005) declared, “Too many Standards, too little time” (p.6) and the same applies to PYP teachers who deal with so many subjects and have limited collaboration time. According to Walker (2003), “only a minority of teachers wants to spend time developing a curriculum plan for their school or district” (p.304).

**Implicit standards and guidance.** Through their Online Curriculum Centre (OCC), the IBPYP offers guides, samples, and models to support the schools but does not require schools to use them. The issue of curriculum alignment is not explicit or settled, and has no specific criteria to assist the teachers and curriculum coordinators. In American public schools, the trend following passage of the No Child Left Behind Act of 2001 is to leave the alignment of content standards and standardized tests to the states. Schools are primarily concerned about designing teaching methods to teach the Common Core State Standards and improving test results (Haddock, 2014).

In an attempt to clarify the function of standards, Goodwin (2008) stated, “Given the elusive and contested nature of what to count as good teaching, content standards can only be formulated in a relative way” (p. 273). Van der Schaaf and Stokking, (2011) added,

Content standards are shared by a community of practitioners at a certain time and
place, and thus are socially situated constructs. Their meaning, strictly speaking, can only be defined relative to the underlying perceptions, assumptions, and preferences of that community (p. 273).

The outcome of many studies on the effectiveness of the use of state-designed standards in teaching and rigorous evaluation and certification was not sufficient to draw firm conclusions about their superiority or success (Cantrell, Fullerton, Kane, & Staiger, 2008; Hakel, Koenig, & Elliot, 2008; Ingvarson, 2009). The IBPYP approach that allows teachers to design and align their curriculum has not been researched enough to prove its validity either.

**Models of Curriculum Alignments**

Specialists like Webb, Alt, Ely, Cormier, and Vesperman (2006) and Marzano and Kendall (1997) tackled curriculum alignment and generated strategies and criteria to facilitate the process of curriculum alignment. Others used collaborative methods (the Delphi Method) or invented tools (the Taxonomy Table) that offered approaches to curriculum alignment but at the same time demonstrated the complexity of the task for novice practitioners.

In addition, teachers and school heads see the concept of curriculum alignment differently. If we look at alignment as the agreement between two or more system components, we face various elements that could be aligned ranging from content, assessments, textbooks, instruction, objectives, written curriculum, skills, standards, etc. Each of these components could be a system in itself, which requires coordination and design that allow for analysis of the interrelation of the chosen elements. English (1992) created a matrix of the three components of curriculum: the written, including textbooks and standards; the taught, including lesson plans and classroom instruction; and the tested, formative and summative tests, and student assignments. He posited that any of these categories could be aligned to any of the other categories. The way that schools understand alignment has a great
impact on what aspect of this matrix they choose to focus on. Alignment could be addressed from different perspectives. Table 1 summarizes a variety of options for alignment.
### Table 1

**An Example of Various Alignment Strategies**

<table>
<thead>
<tr>
<th>The Author/s</th>
<th>The Components Addressed</th>
<th>The Alignment Strategies</th>
<th>The Alignment Criteria</th>
</tr>
</thead>
</table>
| Freeman, Kuhs, Porter, Floden, Schmidt, and Schwille (1983) | Alignment of textbooks to standardized tests | - Summarize the standardized test topics  
- Delineate coverage of the topics in textbooks | If 20 or more topics were covered, the textbook was coded as aligned. Howson (1995) used the Third International Mathematics and Science Study (TIMSS) list of topics and expanded the concept of alignment to an inventory of how the topics are taught. |
| Porter, Kirst, Osthoff, Smithson, Schneider (1993) | Alignment of content to instruction | Categorize the content of Science and Math in each classroom into three dimensions of descriptors and compare them by:  
- Topic coverage  
- Cognitive demand (including, memorize, understand concepts, collect data, order/compare/estimate, perform procedures, solve routine problems, interpret data, solve novel problems, and build/revise proofs)  
- Seven modes of presentation (including exposition, pictorial model, concrete models, equations/formulas, graphical, laboratory work, and fieldwork) | None |
| Marzano and Kendall (1997a) | Alignment of standards and standardized tests | - Compile all State standards into one document  
- Synthesize all of the standards for each subject area into one set of standards for the subject area they called “Content Knowledge” book and CD-ROM  
- Use the “Content Knowledge” as benchmarks for comparing State standards to each other | Four criteria for the alignment of assessments or textbooks to standards were designed by (Resnick, Rothman, Slattery, & Vranek, 2003):  
- Content (what students should know by grade level)  
- Performance (matching skills to standards)  
- Level of difficulty (easy, medium, hard)  
- Balance and range (depth and breadth of standards) |
Table 1. (Continued)

| Webb (1997) | Alignment of State standards and State assessment. | Three approaches toward alignment:  
- Sequential (where we develop documents in sequence and the first is used as a reference for the second)  
- Expert Review (rely on experts)  
- The creation of a common description of curriculum content. Analyze the alignment between the common description and the other parts of the education system, such as standards, assessment, etc. | Two levels to analyze how closely the expectations (standards) and the assessments (State tests) share the following attributes in content and depth of knowledge.  
1- Content:  
- Categorical congruence (the same categories of content are present in the standards and the tests)  
- Depth of knowledge, (the level of cognitive complexity and the transfer of knowledge)  
- The range of knowledge (standards and assessments cover comparable topics within the same categories)  
- The balance of representation (all standards are represented in the assessment).  
2- Depth of Knowledge (similar depth in the knowledge and the assessment)  

In 2006, Webb, Alt, Ely, Cormier, and Vesperman developed web-based tool and training system to automate the alignment processes and make them accessible to anyone.
### Table 1. (Continued)

<table>
<thead>
<tr>
<th>Glatthorn (2000)</th>
<th>Alignment of the recommended curriculum (standards) to the taught curriculum (instruction)</th>
<th>A process with seven stages:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Appoint an alignment committee trained in the alignment process of the three types of curricula: the written, supported and assessed.</td>
<td>- Appoint an alignment committee trained in the alignment process of the three types of curricula: the written, supported and assessed.</td>
</tr>
<tr>
<td></td>
<td>- Train the grade-level teams to assess the ‘mastery objectives’.</td>
<td>- Train the grade-level teams to assess the ‘mastery objectives’.</td>
</tr>
<tr>
<td></td>
<td>- Make sure to include the states standards.</td>
<td>- Make sure to include the states standards.</td>
</tr>
<tr>
<td></td>
<td>- Define the tested objectives.</td>
<td>- Define the tested objectives.</td>
</tr>
<tr>
<td></td>
<td>- Locate the ‘mastery objectives’ in the textbooks.”</td>
<td>- Locate the ‘mastery objectives’ in the textbooks.”</td>
</tr>
<tr>
<td></td>
<td>- Collate and evaluate the work of all the grades.</td>
<td>- Collate and evaluate the work of all the grades.</td>
</tr>
<tr>
<td></td>
<td>- Use the results in planning units that give the highest priority to the tested objectives.</td>
<td>- Use the results in planning units that give the highest priority to the tested objectives.</td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>In the form of questions to ask while aligning the curriculum:</td>
<td>In the form of questions to ask while aligning the curriculum:</td>
</tr>
<tr>
<td></td>
<td>- Is each goal addressed in at least one subject area?</td>
<td>- Is each goal addressed in at least one subject area?</td>
</tr>
<tr>
<td></td>
<td>- Are complex curriculum goals reinforced in 2 or more subjects?</td>
<td>- Are complex curriculum goals reinforced in 2 or more subjects?</td>
</tr>
<tr>
<td></td>
<td>- Is each goal developed and reinforced from grade to grade?</td>
<td>- Is each goal developed and reinforced from grade to grade?</td>
</tr>
<tr>
<td></td>
<td>- Are you avoiding unnecessary duplication and overlap from subject-to-subject and grade-to-grade?</td>
<td>- Are you avoiding unnecessary duplication and overlap from subject-to-subject and grade-to-grade?</td>
</tr>
<tr>
<td></td>
<td>- Does each subject contribute to the curriculum goals of the school</td>
<td>- Does each subject contribute to the curriculum goals of the school</td>
</tr>
<tr>
<td></td>
<td>In the case of correlated curricula (Glatthorn, Boschee, Boschee, and Whitehead, 2009), like in the IB where teachers should be aware of what skills other subject teachers are teaching:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Define how much correlation is needed subject by subject</td>
<td>- Define how much correlation is needed subject by subject</td>
</tr>
<tr>
<td></td>
<td>- Define the skills and what grade level to be introduced and in what subject</td>
<td>- Define the skills and what grade level to be introduced and in what subject</td>
</tr>
<tr>
<td></td>
<td>- Align standards and outcomes</td>
<td>- Align standards and outcomes</td>
</tr>
<tr>
<td></td>
<td>- Align district goals and the curriculum</td>
<td>- Align district goals and the curriculum</td>
</tr>
<tr>
<td></td>
<td>- Analyze the resources allocated to curricula</td>
<td>- Analyze the resources allocated to curricula</td>
</tr>
</tbody>
</table>

Three curriculum alignment elements were recurring in the previously discussed strategies: the analysis of content coverage, the cognitive coverage, and the depth of both.

Porter et al. (1993) suggested the comparison of content coverage from grade to grade and the classification of the corresponding cognitive levels by creating a crosstab relationship between the revised Bloom’s Taxonomy and Norman Webb’s Depth-of-Knowledge.
Marzano and Kendall (1997) used “content knowledge” as a benchmark comparison between the states while Webb (1997) used the content and depth of knowledge as the main descriptors of alignment between standards and assessment. Glatthorn et al. (2009), on the other hand, addressed the integrated curriculum. They recommended defining the level of correlation in content from grade to grade and the respective skills required to reach the pre-defined outcomes and goals of the curriculum.

Strategies for Curriculum Alignment

The collaborative curricular alignment at independent IBPYP schools may take different forms. In one approach, teachers would sort their UOI content and try to cover all the transdisciplinary themes using age appropriate concepts and skills. Another approach would start from a plan to develop and build on concepts to increase the complexity of content and skills by age, using themes from the transdisciplinary set.

The Delphi Method. When teachers use the first approach and work intuitively using consensus agreement, the process could be compared to a simple version of the Delphi Method. It is a survey technique in which experts (teachers) respond to a set of questions in successive rounds (usually three) to judge and revise content standards. These questions could rotate around the progression of coverage of content or skills in the area under scrutiny. “After each round the answers are analyzed, feedback is given to the experts” (Van der Schaaf and Stokking, 2011, p. 275), and the standards (contents) are revised. According to Linstone and Turoff, (1975), this group method has a cyclical character that generates convergence, especially in experts with common underlying assumptions and preferences (Pula and Huot, 1993). The level of structure, convergence in understanding inquiry and alignment, and the expertise of the curriculum coordinators, who could have been promoted from within the bank of teachers, make the difference in alignment quality from school to school.
William et al. (2009) confirmed that accountability and reliability in education require that students have the opportunity to progress through a developmentally sequenced, focused, and consistent program independent of the delivery method. The IBPYP is ambiguous in its documentation of concepts progression in relation to students’ cognitive development. In general, teachers choose random themes and concepts they deem age appropriate and build around them without pre-selecting the order in which key concepts are to be taught. Schools that use the second approach in attempt to develop a conceptual framework operate in a similar way as proposed by the Inquiry Project.

**The Inquiry Project.** The Inquiry Project is a collaborative project between (a research-based institute) and Tufts University, which plans teaching based on explicit, incrementally developed concepts. It is “a research-based proposal for how ideas about matter could coherently evolve over a long period of time from young children’s ideas to the atomic-molecular theory” (Wiser, Smith, and Doubler, 2012, p.3). Like Piaget, the authors confirmed the importance of propelling knowledge in a sequential, pre-defined way to make sure the assimilation of new information, which is interdependent with the learning of previous concepts, is “structured by what we know of the nature and development of students’ knowledge” (p.3). The IBPYP teachers’ task, to justify the links between the UOI they teach in a conceptually developmental way, could be one challenge too many.

**The Taxonomy Table.** The Taxonomy Table is a generic model that could be applied to all subject areas and theoretically, to all grade levels. It applies to the entire course, not to individual units. It conveys “the relationships of objectives, instructional activities and materials, and assessments with the Taxonomy Table, rather than with each other” (Anderson, 2002, p. 258). The method sorts the three components of the curriculum according to the verbs and nouns used in the statements to place each objective, assessment, and instruction in the proper cell to form three Taxonomy Tables. As Anderson (2002)
explained, when the Tables are compared, “the complete alignment is evidenced if there are common cells included on all three completed Taxonomy Tables” (p.258). For example, the objective, instructional activities and materials, and assessments all fall into the same cell (Understand Conceptual Knowledge). Partial alignment is visible when they all fall into the same row, like type of knowledge, but differ in terms of the column in which they are classified. This method classifies knowledge and cognitive processes to understand what teachers intend to teach, what knowledge is constructed, and what cognitive skills the student will employ.

**Curriculum Alignment in Perspective**

The trilogy of the IBPYP written curriculum, taught curriculum, and assessed curriculum is similar in its form to the three primary components described by Anderson (2002): the objectives or standards, instructional activities, and assessment. The exception is in the concepts and interpretations behind each of them. Anderson represented the three sides of the trilogy as a triangle to study the extent of which each side affects the others, while the IBPYP took a holistic approach. For example, Anderson (2002) looked at the relationship between coverage of objectives and content in testing and whether teachers are teaching what has been assessed. By contrast, the IBPYP focused on whether the teaching has resulted in students who have matured, and whether students have become independent learners and good team players.

English (1992), defined the process used by the IBPYP as an alignment by “backloading” where the curriculum outcomes are developed first and the content after. The teachers gear the process of acquiring knowledge towards enhancing the comprehension of the tested concept. Glatthorn (2000) discouraged “frontloading,” arguing that the teachers may miss assessing the concepts and the “mastery objectives” that should outline what is taught. He differentiated the “mastery objectives” (knowledge) from the “continuing
development objects” (skills), insisting that only the former must be assessed. To the contrary, the IBPYP framework is holistic and gives importance in assessment to both the skills and concepts.

**Conclusion**

The literature review began by conveying the message that a curriculum represents a philosophy that developed from social and economic needs at a time in history. Schools that adopt a philosophy structure the content (written curriculum), the cognitive skills (taught curriculum), and the evaluation (assessed curriculum) in line with their beliefs and goals. In the U.S., curriculum alignment may imply a relationship with the standards or the standardized tests required by the state, not the IBPYP (IBO, 2013, p. 50). In the PYP, schools assess students through teachers’ reflections and the different forms of student assessments: prior knowledge, formative, summative, self- and peer assessments. Teachers use alternative assessment methods, formal and informal, that consider the developmental stages and learning problems of students, which, according to Fleege (1997), allow greater use of the results not to rank students but to provide them with support.

Curriculum alignment is a step in the collaboration process and could be addressed during planning or on the side. Considering the complexity of the task, teachers may address it at different degrees and in various ways. Independent of the purpose and strategies of alignment, three curriculum alignment elements were recurring in this literature review: the importance of the progression in content concepts, the consideration of the developmental stages in building and spiraling skills, and the depth at which content and skills are taught. These key elements in curriculum design and alignment are the main reasons for this research. The research questions aimed at investigating these vertical alignment components through the naturalistic setting of teachers’ regular collaborative planning sessions.
Teachers’ assumptions about curriculum and alignment were explored, and the strategies and difficulties encountered were documented.

Finally, the literature review confirmed the following important facts: 1) Curriculum reflects the philosophy of the school and it should remain in continuous evolution; and 2) Teacher collaboration is a social act that requires structure because it is time consuming and it necessitates a close attention to goals, expected outcomes, and student developmental levels while using reliable protocols; and 3) Alignment should consider knowledge and skills and the level of cognitive depth expected.

This research aimed to explore teacher experiences in a naturalistic context where they interacted collaboratively and reflected on their practical alignment strategies in a qualitative descriptive study. The following chapter describes the research methodology that developed an inductive process to analyze the findings and to answer the main research question about teacher experiences in the collaborative vertical alignment of their Program of Inquiry.
Chapter Three: Methodology

In the IBPYP the teachers plan and align the school curriculum. According to a study covering the transition from the MYP to the DP, Hallinger et al. (2011) expressed the desire of the MYP teachers for further guidance in the MYP vertical and horizontal articulation and the need for published IB cross-program articulation documents. They reported several suggestions for changes to improve student transition. Since little is documented about curriculum alignment in IBPYP elementary schools, this study investigated how the planning process of the Program of Inquiry and the teachers’ understanding of curricular alignment contributed to the construction of a comprehensive curriculum in the IBPYP schools. This research study aimed at investigating the following question: how do IBPYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program of Inquiry?

The Paradigm

This research was guided by the interpretive constructionist paradigm to explore the various experiences of teachers involved in designing and aligning their curriculum. By looking at different ways of aligning the curriculum within different contexts, it was possible to construct patterns and understand that there was no one-way of proceeding but multiple strategies that could share commonalities. The findings could serve as guidelines for those considering planning and aligning their curriculum at school level.

Qualitative Research Design

This qualitative research study explored the IBPYP educational model and investigated how this model worked in different contexts and how the users’ experiences shaped its implementation. The qualitative purpose was to develop in-depth description and analysis of two schools to understand the similarities and differences in the way teachers practiced curriculum alignment, as well as how it could be developed to improve
Creswell (2013) identified common characteristics found in qualitative research such as using a natural setting, relying on the researcher to collect the data, and applying inductive reasoning. This research used Walker’s (1971) naturalistic model of curriculum design in which teachers were interviewed in their school setting while exercising their usual tasks and reporting their own opinions. It depended on the researcher as a key instrument in the collection of multiple forms of data, which was reflected in the interviews, observations, and analysis of published documents. It included the use of inductive reasoning, where the researcher labeled emergent themes that lead to formulate categories and concepts that explained the phenomenon. In a qualitative approach, the researcher focuses on the participants’ subjective views as the main source for data collection. Creswell (2013) added that qualitative research involves reflexivity. Knowing that the researcher may unwillingly influence the research direction and the interpretation of findings, the researcher addressed her positionality and background early in the research to provide a holistic account of the multiple perspectives of the phenomenon.

**Case Study Methodology**

This case study is an empirical inquiry that investigated the recent phenomenon of the IBPYP framework that is spreading worldwide. This one system, applied in different countries and different schools, is hard to dissociate from the context in which it is applied. Yin (2014) defined a case study as “an empirical inquiry around a contemporary phenomenon happening in a real life context especially when the boundaries between the phenomenon and the context are blurry and multiple sources of evidence are used” (p.16). This research required working in the field where surveys, semi-structured group interviews, observations, and official documents were used to collect data. The variety of sources provided a wide spectrum of data that allowed the analysis of, and reflection on, rival ideas and patterns of
practices and behaviors. This has contributed to the creation of a chain of evidence to explain how the IBPYP framework (standards and published guiding documents) is applied in practice (collaborative efforts to align the curriculum).

Creswell (2013) and Yin (2014) acknowledged that case studies could be qualitative or quantitative or both. Creswell (2013) explained that when a case study follows the qualitative approach, like this one, it explores a contemporary bounded system (a case) or multiple bounded systems (cases) by parameters like place and time (p.98). The unit of analysis in the case study could be multiple cases (a multi-site study) that would be compared or a single case (a within-site study). This research fits in the category of embedded multiple case studies (Yin 1984) that uses two sites and collects data from multiple sources to allow triangulation.

The two sites are located in different continents and follow different standards. One is in Western Europe in a private international school, where the school has no obligation to adhere to the local curriculum but rather follows the IBPYP standards; and the other is on the eastern cost of the U.S., where an additional layer of state standards is applied. The two schools were intentionally chosen to represent the implementation of the IBPYP in two different contexts of private independent and public national schools. The logic in choosing the two schools was to study the utility of the IBPYP standards in helping teachers align their curriculum and the differences, if any, in teacher experiences when they have the guidance of another set of content standards. The two sites were studied over a period of three months. This research aimed to understand how the IBPYP framework contributed to helping teachers in the creation of a balanced curriculum. According to Yin (1984), this is an exploratory case study such as Yin and Stake (1995) labeled as “instrumental case.”

The researcher taught in international IBPYP schools and her knowledge of the case helped the process of understanding the boundaries to draw around the cases and the need to
dig for deeper understanding (Stake, 1995; Yin, 2014; Creswell, 2013). However, even though the researcher’s familiarity with the issue may have created some subjectivity in the design, it did not influence the behaviors of the participants (Yin 2014) and had little control over the contribution the teachers reported about how they apply alignment in their planning sessions.

The Choice of Stake’s Perspective

The authors in the case study literature differed based on the paradigm, generalization, the importance of theory, the level of analysis, and reporting. Yin (2014) adopted a positivist approach that aimed at adding structure and finding the truth through the case study’s methodology. Stake (1978) is the main opponent of this approach. He promoted the interpretivist approach focusing on the description of the experiences, analyzing them inductively to allow the reader the freedom of interpretation based on their own background and experience. Merriam (2009) and Creswell (2013) adopted this approach and focused on the lived-experience and the importance of providing the reader with information about one or more cases within a bounded case (s).

Yin (2014) also focused on lived experiences but stressed the importance of providing rich “thick descriptions” (Geertz, 1994) and multiple cases in order to generalize the findings. He emphasized the importance of the role of theory at the beginning of a case study design and he stated that it shapes the study, the research question, and the unit of analysis. According to Yin (2014), the ultimate goal from a case study is to reach a theoretical level that allows generalization through the discussion of rival ideas and the provision of thick description. The theoretical proposition at the beginning of a study defines the areas to be researched in a deductive way but the synthesis of the results is conducted inductively through triangulation and comparative data techniques.
Stake (1978) did not aim at generalization and rejected the use of theory as a starting point to avoid influencing the findings by focusing on proving a point. He advocated for a focus on providing information to allow the reader the freedom of interpretation.

These authors all focused on working within a bounded system in time and place, even though Merriam (2009), Stake (1978), and Creswell (2013) encouraged the collection of data over an extended period of time. The unit level of the study varied from individual, group, institution, or phenomenon, labeled as the object by most of them. I chose Stake’s methodology as a framework to guide this study for three reasons: it allows readers to construct their own conclusions; it rejects the assumption of one truth and values the existence of multiple perspectives; and it does not generalize the “truth” to other schools by creating a theory, but offers clarifications for others to consider in future studies.

The Role of the Researcher

The role of the researcher is essential to bring elicit multiple perspectives on the educational model through discussions and the production of a comparative analysis. The researcher must allow the emergence of themes from raw data independently of personal predictions. According to Miles, Huberman, and Saldana (2014), the researcher’s role is to gain a holistic overview of the context under study. In case studies, the researcher’s additional role is to draw the boundaries in context and time (Creswell, 2013). Many interpretations of experiences are possible and the use of theoretical frameworks, paradigms, and research methods help the researcher to gain credibility and trustworthiness. To do this, I included descriptions and quotes from participants and crosschecked the validity of the information with them. Researchers affect the research in the case study method; therefore, they clarify their positionality early in the research.

Positionality

As an experienced teacher in the PYP who worked in private international schools, I
had a sense of achievement from designing inquiry-based UOI, gathering resources, and creating different ways to involve the students. However, this was challenging when the school-wide units were addressed as a continuum and many teachers struggled in seeing the whole picture. In this research, I tried to pay special attention to the neutrality of my opinions and endeavored to avoid all risks of contamination of results by excluding my own views and interpreting the experiences of the teachers instead. The emergence of themes resulted from the patterns and frequencies of ideas in the participants’ interviews. I have shared the transcribed interviews and the results with the teachers and invited them to give me feedback to increase the validity of the research.

Participants and Access

This instrumental case study focused on a program involving groups of IBPYP educators in one private IBPYP school in Europe and one public school in the U.S. Based on the group activities, an in-depth exploration of the curriculum planning and alignment processes was conducted to investigate the educators’ beliefs and practices in their natural settings to understand the role of the IBPYP framework and standards in their planning and alignment processes.

The Research Context

The phenomenon of curriculum alignment through collaborative planning was studied in two contexts: One IBPYP private international English speaking school in Europe (referred to in this research as the European school) and one publically funded IBPYP school in the U.S. (referred to as the U.S. school). The two institutions had a high reputation for academic excellence and the International Baccalaureate Organization (IBO) had authorized both.

The European school. The school was located in Western Europe, had more than 700 students from over 50 countries, and a majority of the teachers came originally from the U.S. and Europe. The educational program covered Pre-K through Grade 12. The IBO
framework has been used at the PYP level since 1998 and at the Diploma level since 1978 (IBO, 2015). The school was accredited by the Middle States Association of Colleges and Schools and by the Council of International Schools. The strategic plan of the school showed commitment to a comprehensive alignment of the curriculum, the creation of a collaborative learning community, international mindedness, and clear support for the school mission (the European school’s web site, 2015). The school mission statement was in line with the IBO promotion of intercultural understanding and respect for diversity as well as developing challenging programs based on inquiry, knowledge building, and caring (IBO, 2015).

The IBPYP re-evaluated and re-accredited the school in 2012 and one of their recommendations in the area of curriculum was the alignment of the three programs of the elementary, middle, and high schools (internal IBO Evaluation Report, 2012). The next re-evaluation visit was expected to take place in 2017.

The U.S. school. The school was located on the eastern coast of the U.S. and followed an elementary public magnet curriculum that adopted the PYP. According to the Schooldigger website (2013), the school had more than 700 elementary school students composed of white (57%), Hispanic (19.5%), and African American (17.8%) students. The IBO authorized the school in 2007 (IBO, 2015) and the majority of the teachers were Americans (school website, 2015). The school improvement plan displayed on the U.S. school’s website showed focus on three measurable goals including strengthening literacy and math instruction and sustaining a positive teaching and learning environment. Another goal was to “build supplemental content to support IB themes and broaden global experiences for all” (internal document, 2015). The PYP re-evaluated and re-accredited the school in 2011 and some of their recommendations in the area of curriculum were related to the use of proper documentation of their program using the IBO planners and resources and the development of a system to refine the Units of Inquiry and the Program of Inquiry (internal
IBO Evaluation Report, 2011). The next IBPYP re-evaluation visit was expected in 2016.

According to the schools’ websites, the two schools shared the IBPYP commitment to inquiry to develop active, responsible, inquiring minds; promote education beyond the classroom in a safe and supportive environment; and strive towards high educational standards with partnership involving students, teachers, and parents.

**Participants**

This exploratory descriptive case study invited all grade level classroom teachers in the two schools to willingly participate. Twenty-two participants from the European school and 15 from the U.S. school took part in this research study.

Teachers of different backgrounds in nationality, culture, education, linguistic, social status, gender, and different grade levels were encouraged by the curriculum coordinators to participate. They offered their meeting times with all the teams to facilitate the participation of a large number of teachers. A purposeful sampling of maximal variation (Creswell, 2012) was formed. This has developed many perspectives and projected a coherent picture of the experience of the alignment at the chosen schools.

**Sampling**

**The European school.** Purposeful sampling with maximum variation was chosen to allow the intentional selection of all classroom teachers to learn about the multiple case studies in the two selected schools in Europe and in the U.S. Maxwell (2005) states, “purposeful sampling...is a strategy in which particular settings, persons, or activities are selected deliberately in order to provide information that can’t be gotten as well from other choices” (p. 88). Therefore, the teachers were interviewed during their regular planning sessions where they could interact naturally and discuss their practices collectively. Creswell (2012) recommends defining whether sampling strategies would be used at the beginning or after data collection has started. This research had a pre-designed sampling strategy. The
researcher had no interference in the selection of participants. The curriculum coordinator invited all team members by e-mail to participate. She explained the importance of the research to the school and she allocated time for the interviews within the schedule. Twenty-two teachers participated in the interviews (five males and 17 females; eight Americans and 14 Europeans; four with English as a second language) but only 15 fully answered the anonymous survey questions and were qualified to participate in the survey based on the recruitment criteria. The number of participants provided a potential pool that offset the risk of mortality during the conduction of this study. Only a few teachers who had duties to fulfill left before the interviews ended. The following sampling criteria were used for both schools:

- The majority of the participants must have worked at least two years in the PYP system. This would reflect an understanding of the PYP collaborative planning and familiarity with the school culture to increase the validity of the participants’ selection.
- Participants must be at least 20 years old.

**The U.S. school.** The intention to replicate the same design for the two schools failed because the school decided to withdraw from the research. Only two interviews took place at the U.S. school. A 50-minute interview with the magnet coordinator of the school, a 60-minute interview with a senior administrator for the IBO program in the county, a visit to the school, plus 15 anonymous survey answers were the only sources the researcher managed to collect. The school withdrew from the study because they had a concern that the results may have a negative impact on the IBPYP re-evaluation visit that was scheduled to take place in 2016. Due to the need for another IRB approval, which usually requires around one month and the prohibition of research in schools as of April, the search for another district and IBPYP school were not possible until the beginning of the new school year. Therefore, this study will be based on the data collected so far.

**Recruitment and Access**
After obtaining the approvals of the Institutional Review Board (IRB) of Northeastern University, the county under study, and the schools’ administrations, the curriculum coordinators sent by e-mail the researcher’s invitation letter to participate and a survey link to the grade level classroom teachers, the curriculum coordinators, and the principals of the two schools.

**The European school.** In line with the IRB guidelines, the researcher asked for permission to access the sites in order to study the participants who had experienced the phenomenon under study. The European school approved the request and the researcher cooperated with the curriculum coordinator of the school to schedule and hold two 45-minute interviews per grade team within the span of one week. The meetings were held in a meeting room that was reserved for the researcher and access to the school and its published documents were granted.

**The U.S. school.** The researcher contacted the magnet schools’ office in the county asking them to recommend a PYP school and to connect her with the school. The U.S. school principal approved the participation in the study and allowed the researcher to start the process after receiving the permission of the county’s Data and Accountability office. One meeting with the coordinator was recorded and transcribed but the meetings with the teachers were cancelled after the school’s withdrawal from the study.

The choice of two private and public institution sites and holding team meetings in a naturalistic setting instead of interviewing individuals aimed at increasing the validity of the research. However, the withdrawal of the school at the last moment has created considerable limitations.

Before getting the approval from the IRB of the university, the researcher had addressed an email to the principals of the schools to explain the aim of the research to study one system in two different settings to understand whether the teachers live similar
experiences and challenges in aligning the curriculum vertically. The email presented the following purposes: 1) Transparency about the research problem, the aim of the research, and the importance of the research for PYP educators; and 2) The request to allow teacher participation in the study, knowing that the intention was to study the system and not the individuals, and to protect the research subjects and sites by guaranteeing the anonymity of the participants and the use of pseudonyms in citations.

The only act of beneficence the researcher promised was sharing the study with the schools to help them reflect on their practices. Participants in the European school read and signed the “Unsigned Consent Document” (Appendix C) and clarification of the participants’ rights was explicitly explained. The participants were informed about their free choice to withdraw at any point in the research, the commitment to protect their identity by using pseudonyms in citations, the request of their approval to record the interviews, and their consent to the transcription of the interviews (Appendix B).

The U.S. school received the recruitment letter and was informed about their right to withdraw, which they did when they felt that the study could cause a threat to their re-accreditation by the IB committee in 2016. This qualitative study gathered data from the participants who were unfamiliar with the researcher and were reluctant to disclose the scope of what they do in their classroom. Therefore, the fact that the researcher asked questions they were not able to answer enhanced their perception of being evaluated rather than seeing the benefits of the research.

**Limitations**

This research used the postpositivist paradigm considering that a reality cannot be measured directly because it is related to people’s experiences as they interpret it through their lens (Stake, 1978). In this study, the data was filtered through the participants’ subjectivity and although I had developed awareness of my own biases, my experiences, and
expectations, and endeavored not to influence the participants or the collection of data, I still may have impacted the direction the research took and the interpretation of data (Rubin & Rubin, 2012, p.15). One limitation was the scarcity of time available to introduce the researcher and endorse the research publically by the administration of the U.S. school. Conducting an IBPYP research at the time the teachers were still learning about the program and preparing for a re-evaluation visit wasn’t ideal for this research study. The socio political environment in the county where the U.S. school resided required the county’s and the school administration’s mediations to reassure teachers that neither the school nor the teachers were being evaluated. Unfortunately, this did not happen and the school opted to withdraw from the research.

The facts that some teachers in the U.S. school were not trained and were not confident in their ability to implement the IBPYP, because the priorities in training and meeting times were given to the alignment with the local standards, created another variable than the differences in the standards the schools followed. This unexpected variable contaminated the reliability of the findings.

The case studies were bound to their contexts and reflected the realities at the participating schools, which reduced the generalization of the findings. Another obstacle that reduced the generalization was the cancellation of the interviews with the teachers and the limitation of the findings to the information collected from the coordinator of the U.S. school, the teachers’ survey, an interview with a senior administrator for the IBO program in the county, and observations during the researcher’s school visit. Hence, the commonalities and differences that were revealed may serve as a starting point for future research studies.

**Data collection**

Case studies require the use of multiple resources for the collection of data (Yin, 2014; Stake, 1978; Merriam, 2009; Thomas, 2011; Creswell, 2013). This case study
considered direct observation of the interactions of the participants (Merriam, 2009; Stake, 1978), examining existing documents, background surveys, and group interviews with grade level teams, and the principals and curriculum coordinators.

The validity of findings depended on the triangulation of the data collected from these sources (Creswell 2012; Saldana, 2013). The interviewing of each grade level team at the European school using the same protocol has provided a rich and structured description of the different experiences the participants had in relation to the research problem. A variety of naturalistic data collection techniques were used.

**Electronic Surveys**

Using Survey Monkey, an online anonymous data collection site, the researcher designed a set of nine questions based on the research main and sub-questions. The questions referred to teachers’ years of experience, qualifications, the training they attended, their responsibilities, and their understanding of collaboration, curriculum, and curriculum alignment (Appendix E). The survey link was sent to the teachers before the interviews through the curriculum coordinators. The link remained open until the end of data collection to give the teachers time to participate, but no one responded after the end of the researcher’s school interviews. The electronic surveys were intended to prepare the ground for the interviews. They assisted in defining the context of the study and setting the boundaries of the questions. The surveys allowed the gathering of data about the participant background in terms of education, experience, assumptions, and perceptions. The role of the surveys was to get to know the participants and to ease their anxiousness as they start learning about what is expected of them. Knowing that questions in the survey might be interpreted and rated differently (Rubin & Rubin, 2012), participant observation, documentary analysis, and semi-structured interviews were used to support the research.
Document Analysis

Documents from the schools’ website, the Program of Inquiry and Scope and Sequence documents, the IBPYP published framework, and other references mentioned by the participants were verified, and some were used in the references of this research. The school documents were compared with the findings to check for consistency between the teachers’ perceptions and the school documents. This has added to the meaning making and understanding of the practices of the schools. The tools used in curriculum design and alignments were investigated to form a list of school practices that were compared between schools and with the documented information provided by the IBO. Rubin and Rubin (2012) expressed the importance of discussing the documents with the creators when possible (p.27), to understand how and why they were prepared and the purpose they serve, which was covered by the interviews with the coordinators.

Semi-Structured Interviews

Two interviews of 45 minutes were held on site during teacher collaborative planning sessions. The naturalistic approach gave the researcher a friendly, non-aggressive role so the first few minutes of the interview were used to establish trust and make the interviewees comfortable with the setting and knowledgeable about their rights. An interview protocol (Appendix D) was designed and used with all the participants to outline “the thoughts on items such as headings, information about starting the interview, concluding ideas, information on the interview, and thanking the respondent” (Creswell, 1998, p.126). Active listening, observation of team conversations, and field notes about body language and non-verbal expressions were essential to capture the experience of the participants. Reflective memos recorded the researcher’s impressions and were treated as data during the first coding and categorizing phase (Saldana, 2013).

The interviews had two parts: a pre-set group of questions and open-ended questions
designed to prompt the participants to share their thoughts and debates in a naturalistic setting similar to their collaborative meetings. Holding group interviews allowed within-group comparisons that yielded categories and themes related to each school as an independent case.

The second set of interviews contributed to the checking of the understandings captured from the first interview and has built on the raw data gathered to justify and reinforce the emergence of categories and themes. The interviews were recorded using an electronic recording device and were transcribed verbatim into a Word document.

**Data Storage**

The audio recording of the interviews, the electronic surveys, the published documents, and the field notes were stored on a personal laptop protected by a password at the private residence of the researcher. The data was backed up on a personal external disk drive and both will be deleted three years after the completion of the dissertation. To preserve confidentiality, the names of the participants and schools were replaced by pseudonyms and no personal identifiers were revealed.

**Data Analysis**

The collected data was analyzed inductively using comparative analysis. Miles and Huberman (1994) discussed analyzing data comparatively and Saldana provided a structure to analyzing, condensing, and interpreting data.

“Coding is analysis” (Miles, Huberman, and Saldana, 2014, p.72). This research followed Saldana’s (2014) suggestion that coding would allow the discovery of the data by chunking the information into clusters through two cycles. It is believed that coding will lead from the data to the idea, and from the idea to all the data pertaining to that idea (Morse & Richards, 2002). Therefore, this process started with the creation of a coding book that utilized common language and symbols that allowed the discovery of categories of the major
ideas and themes that ran across the interviews. The data collection was achieved within three months and it was interwoven from the start. Field notes and other raw transcribed data were analyzed for patterns and analytical memos recorded the researcher’s perceptions for later analysis. Creswell (2012) explained that explorative analysis in qualitative research has the purpose of making “general sense of the data, memoing ideas, thinking about the organization of the data, and considering whether you need more data” (p. 243). The two sites of the study were analyzed inductively and separately to permit finding similarities and differences and conclude with a holistic view on the system.

The researcher transcribed the interviews and used the NVivo software for coding and analyzing the data. During the first cycle, in vivo words and phrases (Corbin & Strauss, 2008) were sorted into nodes and general descriptive coding (Saldana, 2013) was used to facilitate the finding of common ideas and themes and the creation of consistency throughout (Boeije, 2002) the data collection phase. During the second coding cycle, a constant comparative analysis method (Glaser & Strauss, 2013) was used to compare within groups and across groups’ interviews. Code weaving (Saldana, 2013) was used to condense the themes into categories that allowed answering the research questions.

Thomas (2011) mentioned the impact of the researcher who shapes the interpretation of results and, in this research, the background of the researcher in IBPYP education was expected to shape the design and the choice of priorities in the analysis and interpretation.

**Trustworthiness**

Qualitative studies are based on thick descriptions of the phenomena (Creswell, 2013), which increase the trustworthiness of the findings. The data collected from the different perceptions gathered from the in-depth interviews fed the citations that supported the discussion of the major themes that had emerged from the analysis. To check for the internal validity of this study, which is related to credibility from the perspective of the
participants in the research (Guba and Lincoln, 1985), the approval of the participants of the description of their experiences was essential. Therefore, to analyze the accuracy of the findings, this qualitative research used triangulation and member checking techniques.

Triangulation is described by Creswell (2012) as a process of verification of evidence from different individuals (teachers), types of data (transcribed interviews and field notes) or methods of data collection (documents, artifacts, interviews), to support the findings and their relative themes. Member checking or “respondent validation” (Merriam, 2009) was used with the European school to corroborate the relevance of the findings by the participants who contributed to the understanding of the case.

The researcher’s familiarity with the system and some of the participants, as well as the lack of additional information from interviews in the U.S. school, might have resulted in premature conclusions. This pre-defined risk was carefully considered during this inductive research. Although the literature shows that the researcher impacts the study in many ways, such as through the choice of design and the direction of the study, this research offered a detailed discussion of the researcher’s positionality, member checking, and triangulation to contribute to the verification of data and help prevent implicit biases and premature judgment.

**External Validity**

The external validity of the study is related to the transferability, which is the degree to which the results could be generalized or transferred to other settings (Guba and Lincoln, 1985). This qualitative research provided a thick description of the research framework and the assumptions that were central to the research. To achieve this, data was gathered from the participants until the patterns became repetitive, which means reaching saturation (Merriam, 2009). This happens when additional collection of data would bring no new information. Clarifications of the context and the methodology would allow the reader to check the
possibility of transferability (Creswell, 2013).

**Reliability**

The reliability of the research is determined by its dependability, or replicability. In other words, the research would yield similar results if repeated in comparable settings. In the absence of scores and formalized sampling methods, a thick description of contexts and methods is essential and the success of replicability is context related. The multiple case studies have a higher rate of generalizability as they cover the implementation of the educational program in different settings and allow a higher trust in its replicability. A thorough documentation of the procedures followed in the collection and analysis of the data, plus the checking and rechecking of its correlations is expected to add to the confirmability (Guba and Lincoln, 1985), or the degree to which others could confirm the results and quality of research.

**Potential Threats to Internal Validity**

Attention to research details is essential to minimize the potential threat to internal validity and the increase of the replicability of the study. This research used reliable technical support, such as electronic recording devices (personal computer, and iPhone), Survey Monkey (web based survey) for the individual surveys, and the NVivo software for coding and analyzing the data. The different forms of data collected, and training in using the NVivo program, have contributed to minimizing the threat of misuse of the technical support.

Another threat could be linked to the distance between the two locations of the research sites (one school in Europe and one school in the U.S.) and the period of 3 months predicted for the study. The plan to have the researcher onsite for the interviews to get a genuine feel for the collaboration attitudes and the interactions between the teachers was a success in the European school. Unfortunately, the access to the teachers was not possible in the U.S. school, which could be seen as a major drawback to the study. Maturation did not
cause a threat because the collection of data did not exceed the expected time of 3 months. In addition, the full participation of teachers per grade level covered the risk of mortality or loss of participants in the European school.

**Protection of Human Subjects**

The human subjects were autonomous adult teachers in two IBPYP schools in Europe and in the U.S. I respected my obligations toward them by being honest with them, protecting their data, causing them no harm, and providing pleasant interviews. The approvals of the Doctoral Thesis Proposal, the Application for Use of Human Participation in Research submitted to Northeastern Institutional Review Board, and the county’s Data and Accountability’s committee were obtained before the collection of data. The granted permissions were a reference to the ethical research practices to which the researcher adhered.

**Researcher Bias**

The potential for bias was addressed at the beginning of the research and was expected to create awareness of the importance of suppressing pre-judgment and the dominance of personal opinion. Therefore, the use of theory and the results of previous studies instilled neutrality and critical thinking in analyzing the data. Member checking insured that the data was used in context. The unit of analysis was the educational system, not the individuals, so the experiences of the teachers unraveled the challenges and facilities of the system. Negative findings were framed objectively under the IBPYP framework and were addressed systemically, not individually.

**Conclusion**

This instrumental multiple case studies research is qualitative and does agree with the interpretive constructionist paradigm. Having followed Stakes’ (1994) approach, it has allowed the emergence of multiple perspectives to reflect the multiple realities that surround
the phenomenon of curriculum alignment. The investigative methodology allowed answering the research questions: How do IBPYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program of Inquiry? What assumptions do teachers have about collaborative planning in the IBPYP? What assumptions do teachers have about curriculum alignment? What challenges do IBPYP teachers have in planning their Program of Inquiry? What alignment processes are practiced in the IBPYP schools?

The participants from the European school were interviewed, but the U.S. school decided to withdraw from the research leaving the researcher with limited data. The two case studies were addressed separately and compared for pattern findings while the collection and inductive analysis of the data paid considerable attention to reliability and trustworthiness. Some categories and themes emerged to provide information for the readers to formulate their own opinion within the contexts explored.
Chapter Four: Research Findings

This research explored how IBPYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program of Inquiry (POI). Two case studies in a private international school in Europe and a publically funded magnet school in the U.S. were considered separately to understand how PYP teachers align their curriculum based on their understanding and the guidance they have received. It sought awareness about the challenges, decision-making, and alignment mechanisms the teachers used during their collaborative curriculum design and alignment meetings. The aim of this research was to explore how the teachers address curriculum alignment and the strategies they used in two different contexts; one that uses only the IBO standards and one that incorporates an additional layer of state standards.

The research addressed the schools individually to situate the findings from surveys, observations, interviews, and published documents in the perspectives of the teachers and the school context. In the analysis of findings, the IBPYP private international school in Europe was referred to as the European school and the U.S. public IBPYP school was referred to as the U.S. school. Each participant was cited anonymously as “a teacher,” to give the teachers the freedom to express themselves without running any risk of identification. The grade level teams were referred to as “a team” for the same purpose. The following findings were structured to answer the research questions, and they were clustered under four categories and two sub-categories each.

The first sub-question investigated teachers’ assumptions about collaborative planning and revealed two themes: “Collaboration doesn’t just happen,” it requires pre-requisite conditions and dealing with collaboration conflicts. The second sub-question looked into teachers’ assumptions about curriculum and alignment to disclose two themes related to teacher perceptions of curriculum and curriculum alignment, and the barriers to curriculum
alignment. The third sub-question explored teachers’ challenges in planning their Program of Inquiry and identified two themes related to the design and steps followed in planning new units and the challenges behind them. The fourth sub-question surveyed the alignment processes and strategies and unveiled two themes: the different perspectives of alignment and their related strategies.

The European School

The European school was established around 50 years ago and has 17 years of practice within the IBPYP framework. The environment of the school was friendly and the students were frequently exposed to the language of the PYP. Occasionally, the teachers were heard asking the students to reflect, to be principled, or to inquire. A Grade 5 student was asked to reflect on what he was capable of doing, whether the exhibition product he submitted was the best he could do, and he was asked to reflect on how he could improve his work. As they entered the meeting room, some teachers were still discussing their collaboration plan for the afternoon while others had just come out from a day-long planning session for a new UOI.

The students and teachers were observed using the IB learner profile and attitude words in class and on the playground. The students were asked to be “principled” in the way they behaved and in another circumstance, they were asked to be “tolerant” and “open-minded”. The teachers document the extent of student implementation of these profiles on the report cards. The UOI themes, lines of inquiry, teachers’ questions, and the concepts were displayed around the classrooms. The student work was exhibited in the corridors and in the classrooms, and “assembly” time of all grade level students was used to share their learning on a weekly basis. A foreign language was taught from K to 5 and the school had started the implementation of a dual language program starting from Pre-K and adding one grade each year. This new program was not part of this research.

The Teachers’ Background
Out of 15 respondents to the survey, two teachers were disqualified because they had taught less than 2 years in a PYP school. The majority of the teachers (seven teachers) had taught more than three grades, three teachers had taught all the grades from K to 5, and three had taught at least two grades. Seven of the participants in the survey had a Bachelor of Arts (BA) degree, while six had a master’s degree. The majority of the teachers (10 teachers) had over 12 years of experience in teaching and three had over 8 years, but their experience in the PYP varied, from eight teachers who had taught two to 10 years, and five who had taught 11 to 17 years. Some of the participants have had the basic “Introduction to the PYP” training with the IBPYP coordinator, and a couple of newly recruited teachers did the reading of the course on their own (Table 2). Two teachers answered using “other advanced training” or “various topics over the years.” Eleven out of 13 teachers at the European school mentioned they had been involved in at least two additional roles other than teaching throughout their employment at the school.

Table 2

The Training Courses Mentioned by the European School Teachers

<table>
<thead>
<tr>
<th>Training Courses</th>
<th>Number of Trained Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to the PYP</td>
<td>3</td>
</tr>
<tr>
<td>PYP – Pedagogical Leadership</td>
<td>2</td>
</tr>
<tr>
<td>PYP – Teaching and Learning</td>
<td>2</td>
</tr>
<tr>
<td>PYP - Concept Based Learning</td>
<td>2</td>
</tr>
<tr>
<td>PYP - Bilingual/Multilingual Education</td>
<td>1</td>
</tr>
<tr>
<td>PYP - The Exhibition</td>
<td>1</td>
</tr>
<tr>
<td>Making the PYP Happen</td>
<td>6</td>
</tr>
<tr>
<td>PYP - The Written Curriculum</td>
<td>1</td>
</tr>
<tr>
<td>Inquiry and Differentiation</td>
<td>3</td>
</tr>
<tr>
<td>The Role of the Coordinator</td>
<td>1</td>
</tr>
<tr>
<td>IB Regional Workshop/Conference</td>
<td>1</td>
</tr>
<tr>
<td>PYP assessment course</td>
<td>2</td>
</tr>
<tr>
<td>Maths in the PYP</td>
<td>1</td>
</tr>
<tr>
<td>In house training about various topics</td>
<td>5</td>
</tr>
<tr>
<td>The Role of Languages in the PYP</td>
<td>1</td>
</tr>
<tr>
<td>Collaboration within the PYP</td>
<td>1</td>
</tr>
</tbody>
</table>

Teachers’ Assumptions about Collaborative Planning

The teachers were asked – individually and in teams – to define collaboration to cross
check their beliefs as a school. In the individual surveys, eight teachers mentioned planning and sharing, and five related collaboration to working together to plan. In fact, the researcher scheduled two sets of 45 minutes per grade level for team meetings (one for the team and one with the curriculum coordinator). The teachers reflected that they made opportunities when necessary (such as for vertical alignment) and they primarily found time during in-service days, weekly assembly times, or monthly staff meetings. Aside from the time set for meetings, teachers met informally as needed. A team mentioned that they had “an average of three collaboration meetings per week,” while another team explained “we have four French and one assembly time every week. It is always sort of horizontal collaborative planning.” All teams confirmed the importance of collaboration in their career and the fact that it makes the curriculum richer. Some answers to “how does collaboration impact your planning and teaching” were, “Collaboration is an integral part of what I do and who I am as an educator,” “Collaborating with other professionals also affirms that as a teacher you are on the right track,” and “The curriculum is richer because we get ideas from each other. I learn from my colleagues and hope I give them some ideas as well. It's good to get different perspectives on things and to share skills.”

The culture of collaboration is evident in the school as the teachers in teams were interacting in a respectful, humorous way and they were approving each other’s comments. The teachers had the same conception of collaboration when asked in team and individually. One team reflected that collaboration in the PYP is about the “sharing of ideas in a natural way in order to resolve problems and work together towards a common way of teaching and learning.”

**Collaboration doesn’t just happen, it requires pre-requisite conditions.** The teachers believed that effective collaboration is done willingly, but that the process starts by requiring it and allowing time in the schedule for it to happen. A teacher asserted that
although collaboration begins in a contrived manner, it should become a culture of a school. He said, “It should be as natural as possible. It should come with the values of the school.” This was approved by a teacher from another grade who added, “There should be certain readiness to listen to others, it should be as natural as possible.” However, teachers admitted that collaboration in not a natural behavior for everyone. One teacher noticed, “Some people are naturally good at sharing ideas and others seem to be working in their own little cave.” Another teacher elaborated,

I think it has to be contrived at first if it has not already been there. If it has not been instilled because people don’t naturally collaborate, I think they need modeling, time to do it, and structure, (some kind of a formal structure), then it becomes natural.

The principal explained that collaboration must be guided and should become a platform for open discussion,

I have never met someone or a school who would say it [collaboration] was just there. It has to be both [contrived and a culture]. It has to be a culture and that culture is set by the senior leadership team; a collaborative leadership team who are not dictating positions but opening a discussion forum that would filter through the troops if you like.

Although most teams agreed that contrived collaboration is helpful to keep the teachers focused on working together and it is set for times when every teacher is free, they confirmed that by now it comes naturally to them.

If collaboration does not happen on its own and requires a contrived beginning, some teams and the principal explained that putting teachers together does not mean they are collaborating. One team agreed, “I don’t think you can force people to collaborate. They can walk away, shut the door, and do something else.” Therefore, the principal’s differentiation between collaboration and cooperation confirmed the teachers’ reflections. She gave an
example of cooperation:

If I am cooperating and someone has a good idea and is excited about it, I’d say keep on…I’ll help you. I am not giving my input [by saying] you can change it and do it this way. I am not bringing my knowledge and my skills to the table.

The teams defined different pre-requisite skills and conditions for collaboration to make it happen effectively.

*Stay on track.* In addition to acknowledging that they could always collaborate more, some recognized the fact that they should stay on track. One team mentioned, “We do meet a lot, we enjoy collaborating, but our meetings aren’t always efficient.”

*Know your curriculum.* Coming prepared for a meeting by reading the material and having an understanding of the topic was discussed as essential for running effective, collaborative meetings. The principal explained, “For collaboration to work, it is important to have a common goal that everyone is aware of and know what you are working towards,” and the curriculum coordinator expressed her expectations from the teachers,

If you don’t have any understanding you would of course sit there and say “Yes.”

You have to have some preparation time yourself, understand the concept that you are going to talk about or the skills, so when you are at the table to collaborate you would have some prior knowledge before the conversation.

*Continuity in teams and professional development.* The teachers observed that the more there are changes within a team, the more collaboration time and efforts are needed. A teacher shared her experience, “if you have completely new team members one year, planning can be a little harder. Nobody knows what’s there, what resources are there, what works.” In addition, professional development (PD) is essential, and the arrival of new teachers means more training is needed. The principal addressed that in her reflections about new teachers: “A lot of teachers struggle with the PYP initially. They are not used to a broad
curriculum design in an integrated way, which is why collaboration and the PD are important.”

**Scheduling.** Providing simultaneous teacher free time was an issue for three grade teams who apply the dual language program. “We really struggle to find time to collaborate together because our schedules don’t match up,” mentioned one team member, and another one suggested block scheduling:

I think if we are talking not just about our team but also more structurally, I know that one thing that our school has struggled with is scheduling. Block scheduling to me is really important…we have these meetings…[they] are short and by the time you really get into meaningful discussion about something, guess what, it is over.

**Involvement in decision-making.** The teachers believed that collaboration makes them stronger, and the fact that they decide on what to teach, what to change, and how to structure activities gives them ownership of their curriculum. Their collaboration becomes part of their decision making process. A teacher shared her philosophy stating,

I don’t think anyone of us knows always the best thing, whereas when we work as a team, where people have the opportunity to give their ideas and to make suggestions, the whole that comes out is going to be better than some of the parts.

The principal confirmed her belief in this finding, as she expressed the following thoughts:

I think that the advantage of [involving the teachers in curriculum design and alignment] is through the collaboration and the discussion of the decision-making the people feel like they own the curriculum. It is not just given to them to teach, it is theirs, they want it, they’ve grown it, they’ve defined it.

**Sharing similar pedagogical approaches.** Some teachers attributed their positive experience in collaboration to the fact that they shared similar pedagogical understanding. A team member summarized, “Effective teams must have, like us, similar pedagogical
approaches, viewpoints on a lot of things. I think it is easier to collaborate when you have a
team that is put together purposefully.”

Other commonalities that facilitate collaboration were attributed to the ability to listen
with open-mindedness and accepting others’ ideas with tolerance and respect. A teacher’s
opinion about good collaboration habits was met with approval from her team as she said,
having “people skills and the willingness to listen, try out new things, a mindset of being
able.” The principal confirmed these attributes:

The culture of respect so people feel secure so there is no such a thing as stupid idea
or bad idea, but just an idea. So have that respect amongst the group and tolerance as
well of where people are coming from.

Leadership. The teachers referred repeatedly to two leadership positions, including
the team leaders and the curriculum coordinator. The team leaders coordinate horizontal
teamwork and vertical team leaders’ discussions, set the environment and the structure of
collaborative planning, and have some administrative tasks. They represent the grade level in
vertical meetings and global discussions. Most participants mentioned the impact of the team
leaders on the quality of the collaborative meetings. One teacher noted,

It also depends on our mighty team leader. She’s done this for a long time…we’ve
changed everything this year for our central ideas…we keep changing it and there is
no room for those fights. If it doesn’t work this year, okay, we try again next year.

The principal and the curriculum coordinator model leadership during their meetings
with teachers. They both acknowledged the importance of the team leader’s role. They said,
“It is really someone who has the pedagogical understanding, who works and is collaborative,
and can create that collaborative environment in their team,” and that team leaders “are not
just there to assign parts of the curriculum. They are there to motivate their team, support
their team and to build that collaboration.” The second recognition was for the curriculum
coordinator who works collaboratively with the principal to model collaboration during staff meetings and who takes 10 minutes of each monthly team leader meeting to deepen their leadership skills.

**Collaboration protocol.** The collaboration protocol was referred to as “the Essential Agreements.” All teachers have to sign it at the beginning of each school year. The teachers referred to it as a practice that was incorporated into their habits and that was not something they pulled out at every meeting. One team summarized the practice at school,

At the beginning of the year with the curriculum coordinator, doesn’t she give us kind of the common agreements for meetings? So, we kind of sign up to that. But to be honest even if we didn’t have it written down on paper that’s what we adhere to.

Although large meetings beyond the grade levels and those with the curriculum coordinator were structured with an agenda, responsibilities, roles, and electronically shared minutes, teams met informally so often that practically, planning was driven by the instilled habits of collaboration they had developed. A team confirmed,

We just get together as needed, we know things need to be done and so we try to assign different tasks to different people…somebody would say in the morning, “Gosh we need to think about this and this and this,” so we pull together and we get it done.

**Dealing with collaboration conflicts.** The teams face challenges in designing their POI. Some teachers have mentioned strategies they have adopted in their teams that were either facilitated by the PYP system or that they had learned on the job. Four strategies were dominant in dealing with collaboration conflicts: flexibility in content and delivery, the involvement of an expert, allowing time for reflection, and valuing different perspectives.

**Flexibility in content and delivery.** The written curriculum was designed and approved by all grade levels. Therefore, the learner outcomes guide the design of the UOI.
The rest, in terms of activities and strategies, are not a source for conflict as the system allows the freedom of implementation and documentation of all approaches. A teacher put it simply:

> We all have our little own ways of doing things. That is what makes the strength of the PYP. It is conceptually based and we all are heading towards the key concepts and the related concepts. We can do it certainly in different ways and that’s fine too. I don’t think we’ve had big arguments about how we are doing our units because there are certain things that we do together and we talk about, share ideas, compromise if needed but definitely we all do different things in our classrooms at some points.

The teachers have a sense of safety in doing things differently and have the permission to make changes after their final reflections on the units. They can readapt and tweak if they detect that they did not get the results they expected or they had misalignment in some parts. Every team reflected this freedom that was expressed by one team saying:

> That’s when we have revamped existing units while we have changed and tweaked (others) because we didn’t feel it is informing our teaching…and very often we have found that we needed to make changes.

One teacher wrapped this safe flexibility in one sentence, “Changing things every year and being willing to look and say, look it didn’t work, let’s try something else,” while another confirmed the acceptance of other perspectives by saying: “we are not in the dynamic to say, that’s the way it is done.”

**The involvement of an expert.** The teachers and the coordinator referred to the written documents for reference but the teachers often saw no barriers in reaching out to the experts, like the literacy coaches or the learning support staff, to help them make decisions. In sorting out their differences, one teacher gave the example, “We even recently pulled in
the English Additional Language specialist to help us review our rubric. So sometimes we pick particular people just to make some changes that make sense and we just seem to come to agreement.”

The curriculum coordinator was considered a reference who, in the opinion of the teachers, was very democratic and was often backed up by research studies, good practices, test samples, benchmarks, using other content standards, or IBO documents. One teacher reflected on the curriculum coordinator’s expert role explaining the following:

She is also very good at saying ok that is what you think; she doesn’t say this is what we think because we are experts. She then would go to like some published documents…(or) she would say what do the key people in language say about it… she would find what good practices she could find from somewhere else. She doesn’t just let us make up our own mind because we think it is a good idea. She finds benchmarks…

*Allowing time for reflection.* When there was the potential for conflict, one teacher explained that her team members adjourned their discussion to allow reflection. She mentioned:

Sometimes you put a conversation to one side and come back to it at a different time. That is just another aspect of collaboration. It is okay to disagree but then you have to agree as a team to come to a consensus.

*The children come first.* The teachers at different occasions mentioned that the children come first and all decisions were made to maximize their learning. A team candidly supported a teacher as she expressed her belief:

I mean you’ve got to leave your ego at the door and realize you are one of the team and while you have an opinion and everybody’s opinion is valued we’re kind of, we’re there to do what’s best for the children.
Collaboration is, as one teacher said, one of the pillars of the PYP, but it does not “just happen.” It takes conscious steps and a culture entrenched in the respect of others, the feeling of safety in displaying diversity, and a supportive leadership that sets time to make it happen.

**Teachers’ Assumptions about Curriculum and Alignment**

The teachers found horizontal alignment essential to create consistency between the classrooms of the same grade and this was addressed through regular meetings. Vertical alignment was not a daily concern for them, knowing that the purpose and frequency of alignment meetings would change with the school focus of the year. Vertical alignment was considered cyclical and the work was spread over a long period of time as part of the school strategic plan. The teachers in a team would represent one subject area each in order to contribute to all subjects and be part of the discussions and decision-making that would take place in the whole school. Teachers would report back to their teams and, collaboratively, decisions would be made and reported back to the subject area committee.

**Perceptions of curriculum and curriculum alignment.** Four out of five of the curriculum components in the IBPYP were mentioned explicitly in teachers’ definition of the curriculum: content, knowledge, skills, and attitude. The majority of the teachers individually defined the curriculum as a framework of “what is taught” in terms of content, skills, attitudes, and concepts such as, “Curriculum is the body of content a school imparts to the students, inclusive of knowledge, skills and attitudes.” Others considered “what is learned” by adding the learner outcomes like in the following: “Curriculum consists of the disciplines, content, skills and dispositions that we expect students to learn. These learner outcomes are the contract between the school and learners.” Another set of teachers added “what is assessed” to the framework by stating, “Assessment is an important feature of the curriculum.” One teacher had a holistic view similar to the IBO philosophy encapsulating the
students’ learning experience. She wrote: “Curriculum is the outline/or backbone of the totality of the educational experience. It is essential in knowing which areas to cover and what to do in the classroom.” The clusters of citations above reflected the sum of what the teams discussed, reflecting views of the curriculum as a framework of scope and sequence that has been taught, or specifically, the learner outcomes. One team agreed, “Curriculum is what has been taught in the classroom. Not decided on by teachers, but it is a framework of scope and sequence that we are currently using.” Another team was specific, “I would define curriculum as the learning outcomes.”

**Curriculum alignment.** The majority of the teachers looked at curriculum alignment as a progression using words like “build upon each other,” “progressive learning journey,” “from grade level to the next,” “a flow in the educational experience,” “fitting in the classes above and below,” “continuation from a year to the next,” “when the outcomes, skills, content and conceptual understanding are scaffold both horizontally and vertically,” “that the next year can scaffold knowledge and concepts from the previous year.” Some mentioned vertical and horizontal alignment but what is notable is their perception of the manner in which curriculum alignment is implemented. The words “in a logical manner,” “a learning journey,” “preparing the student for each step,” “keeping in mind where they are coming from and where they are going,” “educational experience,” “ensure consistency,” “scaffold knowledge,” and “purposeful planned manner” reflect the constructivist approach that the IBO promotes.

The team interviews reflected similar perceptions as above, with the addition of one team that talked about wishing for consistency in teaching strategies throughout the elementary school. A teacher gave the example of thinking strategies that should be adopted by all grades to pay off. She said, “Thinking strategies can be done both horizontally and vertically…If we were to introduce some of these approaches … you wouldn’t actually see
the benefits of that until a number of years because it really needs to be built on, one year on the other.”

**Everyone is responsible for curriculum alignment with the supervision of the curriculum coordinator.** In responding to the question, “who is responsible for curriculum alignment,” there was a unanimous understanding that everyone is responsible, with the guidance of the curriculum coordinator who oversees the whole picture and the process. Two responses summarized the majority, which were “Teaching staff, curriculum coordinator, principal, and everyone involved in teaching the curriculum” and “Everyone, but it is led by curriculum coordinators and those placed in leadership positions.”

**Curriculum designers vs. curriculum implementers.** Most teachers perceived themselves as curriculum designers and important contributors to curriculum alignment. The teachers considered that they had picked and compared the learner outcomes from the IBO’s model curriculum and assigned them to grade levels instead of age groups, chose the themes, concepts, content, resources, and designed the assessments. Therefore, they have designed their curriculum. An experienced teacher in the PYP spoke for many teachers who were interviewed. She said:

> I think as each over the years while I have been here, I have been involved in frameworking new units and yes, I would say that in the PYP schools there is that expectation that you are able to design the curriculum. The framework is there, you got to put the meat on it. That’s we how decide what our units are about and how best it would work vertically skill-wise, concepts and knowledge-wise for each of the students and each of the grade levels.

On the other hand, some believed they are designing the curriculum relatively, and not absolutely, because their work has been mostly tweaking existing units. Another veteran teacher in the PYP explained this point of view. She said,
Teachers are designing [the curriculum] relatively; you are not designing it absolutely. You’re taking something that’s there already and you put your own personal touch to it but you are not actually fully designing it. It is something that comes from the history of the school; you are taking something that is there already.

The principal and the curriculum coordinator strongly refuted the idea that the teachers are curriculum designers and saw them as implementers, or simply designers of UOI, which “is not writing curriculum.” The curriculum coordinator explained that the IBO has released a model curriculum that did not previously exist because “they realized that teachers are not curriculum designers…they are implementers.” She elaborated:

The teachers are involved in curriculum design in groups and committees but I don’t see that they are actually designing up curriculum… the teachers are not deciding what to teach… I think the teachers design activities and that’s why a lot of teachers struggle with the PYP initially. They are not used to a broad curriculum design in an integrated way, which is why collaboration and professional development are important.

Although a few teachers did not call themselves curriculum designers, they referred to the experts who are specialized in curriculum design and alignment but did not exclude the involvement of teachers. An experienced teacher in the PYP aired her concerns:

I think you need the guidance of people who are really trained to do curriculum alignment and have the idea of how it works and how it should be. But at the same time I wouldn’t say that those people should be in charge and not having the inputs of the teachers.

Albeit some teachers wanted to have an input in the curriculum, they confessed they would rather spend their time teaching. A few teachers echoed the feeling expressed by one teacher:
I do feel that it is not the best use of our time as professionals to be pondering what needs to be covered. To be thinking what a curriculum is, I think the best use of our time is how to teach this curriculum.

Other teachers confessed that curriculum design and alignment were hard work but they liked the freedom, even though what was required of them was more than they had wished for. One teacher expressed her mixed feelings saying,

I kind of see pros and cons. I see some nice pieces curriculum wise and I see some struggles… I think the beauty of it… I can bring a lot of my passion and subject areas forward. There is a lot of creativity.

Overall, the teachers admitted that curriculum design and alignment are a collaborative work and its success is often related to the competence of the curriculum coordinator who is, according to the teachers, “a hub at our school.” One team repeated confidently, “We are in good hands, we are getting guidance to move forwards.”

**Barriers to curriculum alignment.** The elementary school teachers at all levels had no awareness of any IBPYP training in curriculum alignment. Some believed that first, it could be a hit or miss process because of the lack of expertise, lack of time, lack of resources and content standards, the freedom teachers have in triggering changes, and the continuous search for guiding content standards. Second, some teachers thought vertical alignment is a challenge in science, and social studies. Third, a team believed curriculum alignment is a challenge that has to be tackled horizontally and vertically at the same time. Fourth, the hiring of new staff requires money and time for training, and last, any changes in curriculum require buy-in from the faculty.

**First: A hit or miss process.** Some teachers had mixed feelings about the curriculum. They warned about their lack of expertise in curriculum design and alignment, the double effects of the autonomy they have, and the lack of time, resources, and content standards.
Various levels of expertise. The teachers are learning on the job and follow the directions they receive from the curriculum coordinator. In a response to a question as to whether the curriculum coordinator had attended any IBPYP curriculum alignment training, she confirmed:

Oh no. I went to the IB coordinator [course] but it is mostly the PYP coordinator where you just have to see that all is done. You are the person who has to show that it has been done by somebody… that the documentation is there.

The teachers trusted their curriculum coordinator who has a strong background in curriculum and considered her as a resource to guide them. However, a few believed that the curriculum changes direction with the initiatives and the perceptions of the leaders. A teacher shared her long experience, noting that in an IBPYP workshop she had attended, two presenters had opposite answers to the same question because of their different experiences with the IBPYP.

Teacher autonomy. A team reflected on the freedom the teachers have: “It seems that depending on the teacher, something else could have been taught.” They added, “A lot of things tend to change because of personal likes.” Some worried that teachers are not proficient in understanding the cognitive and developmental levels of children. Therefore, they were anxious that they might have missed offering complete coverage for the children.

Some teachers reflected that curriculum design and alignment is hard and takes much of their time but gives them ownership of the curriculum. One teacher confessed: “I think it is extremely difficult [to align the curriculum] actually. You have to really inquire yourself and think about it you know, it is about problem solving.” Teachers did perceive this challenge positively in general. One teacher who received agreement from her team, wondered, “We all are getting the opportunity to be involved in the process…this would give us ownership of the curriculum. Doesn’t it?” Another teacher concluded her reflection on
the difficulties in designing and aligning the curriculum by positively looking at it as an opportunity to be creative.

*Lack of time and resources.* The teachers confirmed they never have enough time and resources. To manage the continuous need for collaboration time, teachers broke down the tasks and spread the vertical alignment work over the school year. The teachers struggled with finding resources from various countries to teach their international students from different perspectives while focusing on continuity and alignment from grade to grade. The curriculum coordinator and some team members expressed a concern that they live in a non-English speaking country and they struggle in finding adequate resources that reflect the different cultural representations of the school and use English as a medium for communication. They said,

Sometimes it feels like reinventing the wheel… It takes so much time and efforts in putting these 6-week units together and getting into all those learners’ outcomes and getting all the resources. I think the most difficult thing with the IBPYP is pulling together the resources for teachers.

*The need for content standards.* The teachers reported the adoption of different standards in addition to the IBO standards. The curriculum coordinator explained that the IBO standards are a starting point. She said,

It is a starting point and they [IBO] tell you that. Because most of what the IB schools do, if they are national schools, they got their national curriculum they have to align with… [But international schools] have to choose one [standard based program]. Our middle school chose to align with Ontario [in science].

Some teachers considered the content and depth of knowledge in the PYP as “tricky and a bit of a gray area.” They were relieved to refer to well-established standards that they could use to adjust the alignment in content. One team agreed, “The Ontario is the
framework work for science. It is research-based and is vertically aligned already. It is a lot easier to take that than identifying what these kids need to walk away with.” However, this adoption of additional standards has also raised some reservations: “You may adopt best practices or models from different resources but at the end does it really create an aligned curriculum?”

The elementary school is part of a K-12 system. One team was worried that changes in the upper grade policies or learning outcomes would impact the lower grades, which might cause a push down effect in content and skills’ requirement. They thought this would create another reason to tackle curriculum alignment. A teacher shared her concern saying,

Personally, I feel like what happened at the school where we were using the Ontario standard is an overkill… At a certain point we had the feeling that we don’t have enough content being addressed formally in the elementary school. My understanding of that was that there was a process driven from people further up high; what I mean is high school and middle school science teachers.

Second: Vertical alignment is a challenge in science, and social studies. In reflecting on the curriculum and its alignment, the teachers clarified that the PYP is “concept based” and “is not testing oriented.” Therefore, “content does not have to develop from grade to grade but the learner outcomes should.” A teacher explained, “The vertical alignment of the subjects apart from language arts and math is a big challenge.” He commented that content could be easier to map vertically in math and language than it is in science and social studies. He added this is because “you can do stand-alone units if the math content cannot be integrated into a UOI but the knowledge and skills you want to teach in science are not addressed as stand-alone.” He referred to the IBPYP structure that is limiting vertical alignment in these subjects. He said,
PYP is horizontally based themes where parts of the descriptive of the transdisciplinary themes are covered at different grade levels but the content is not necessarily built upon from grade to grade… So the vertical alignment is bit a hit and miss.

He gave an example:

We don’t have a unit about the human body, so we really don’t touch on it in the school year and you kind of hope that another grade does it in some place… we cannot ensure that our kids are being exposed to this because it is not one of our UOI. Another teacher compared the PYP with schools where the subjects are addressed individually and he agreed that the PYP does not provide a wide coverage of content. He said:

There is no framework for it. I completely agree, in sciences I think in a traditional school, probably every year the students would have a unit about the human body and you have more and more in depth about the human body.

**Third: The challenge of tackling horizontal and vertical alignment at the same time.** Some teams raised the issue of timing in the implementation of the integrated curriculum. They mentioned that what you teach vertically, in math, for example, has to coincide with what you are teaching in science at a certain point in time. One teacher gave the example of graphing that the students must learn in math and which is used in science. The fact that the elementary school teachers teach most subjects gives them flexibility that middle or high school specialists do not have.

**Fourth: Faculty turn over.** In international schools, teachers and students have a higher mobility rate than in a national educational system. Consequently, money and time are spent to train the new staff in order to create a common understanding and consistency in the use of the PYP language. The principal reflected on the need to get new teachers up to
speed on what was done the previous year, and on the fact that the administration would have
to allocate resources and time to create professional development opportunities for topics that
had been addressed before.

**Fifth: Avoid attachment and encourage faculty buy-in.** The teachers warned about
teaching one grade level for too long because it creates attachment to a particular way of
doing things and increases the resistance to change. As a team put it:

   A barrier might be that you might be in one grade for a long, long time and you
   haven’t moved around. I think sometimes ownership of a particular part of the
   curriculum can inhibit that sort of alignment. Being passionate about a part of the
   curriculum that really should be taught lower down or higher up.

   Another team looked at encouraging buy-in to the changes to improve the fidelity in
implementation. They endorsed a teacher’s reflection stating:

   One of the barriers is ‘buy-in’ from the other grade levels because when you align, it
   is teamwork. People get attached to what they were teaching and the way we’ve
   taught it so the idea of losing something that you have taught before or that kind of
   thing is unsettling I think.

   The findings about teachers’ assumptions and experiences in curriculum and
curriculum alignment in the European school have projected a common understanding of the
IBO philosophy and similar strategies adopted by the collaborative teams who worked
horizontally to plan their Program of Inquiry (POI) and vertically to align it from grade to
grade.

**Teachers’ Challenges in Planning their Program of Inquiry (POI)**

   The POI is composed of six UOI at each grade level across the elementary school.
Collaboratively, the teachers plan and design assessments and face challenges that this
research study has gathered from the different participating teams.
The steps in designing new Units Of Inquiry. The IBO provides a PYP planner model to guide teachers. In the naturalistic approach that this research used, discussions took place and demonstrated patterns or a thinking process that shaped the collaboration dynamics of the interacting teams. The planning process of the UOI was consistent across the various teams and was sequenced as follows:

Suggest change. A team member explained, “The conversation does not happen in one shot…it takes formal and informal discussions within the team and with the curriculum coordinator.” Informally, the team members would express their feelings about the unit and come up with ideas starting a year ahead of the change. The principal reflected on that saying: “Usually it’s because it’s a new group of teachers who weren’t the original creators of the unit and who don’t see the appropriateness of it.” Formally, the team would, in conjunction with the curriculum coordinator, examine the reflections from previous years, check the vertical coverage of the POI and would come up with a valid reason that could be related to alignment or the inappropriateness of the current unit. Once the curriculum coordinator, who oversees the structure of the POI, approves the need for change and the strand that would cover it, the team members would start their active search.

Discuss change possibilities. The team would be given extra time to meet and bounce around ideas. A teacher elaborated, “There are things we disagree about, but I think generally we go by consensus… Even if time doesn’t allow us to be in one room, discussion could be carried on using emails.” This process of evaluating different ideas would slowly narrow down the ideas to a possible option to undertake. The teachers would keep in sight the gap they have to fill or that their action might create. They would examine the scope and sequence documents, check the learning outcomes and compare them with what the previous ones. Then they would decide what they want the students to learn and discuss what the new central idea and transdisciplinary theme would be.
Plan the change. The team would have to check the vertical alignment to verify that their new central idea does not impact the rest of the POI. A team leader suggested that they could touch on an existing concept with the condition of developing the understanding further. Some teams reported that they consult with the Online Curriculum Centre (OCC) that is available on the IBO website to get ideas or see how a certain concept was developed by other teachers. The OCC documents different units that the teachers share through the IBO website.

With the approval of the curriculum coordinator, the team would draft a rough planner following the directive steps of Managebac, a curriculum mapping software that offers an electronic form of the planner and maps the entire POI and the scope and sequence documents. The teachers would read the transdisciplinary descriptor and choose a focus, write the central idea, write the lines of inquiry based on the choice of some key concepts, ask the teacher questions, design the summative assessment, and select the transdisciplinary skills. A teacher concluded, “Once we know what we would be assessing them [the students] on, then we would develop our unit from there.” The integration of subject areas and skills are planned at this stage.

Design the unit. A unanimous understanding that the design starts by considering the learner outcomes and the summative assessment was observed across the elementary school. The use of Managebac created structure in the mind and on paper based on “Backward Design (Wiggins & McTighe, 2005).” Backward Design promotes starting the process of planning by defining the learning outcomes. The sharing of ideas for activities and the search for resources to provide content was done collaboratively, but the implementation was up to the teachers. “As long as the concept is the same it doesn’t matter… we should have the same outcome,” said one teacher. She added, “By sharing you are just cutting down the work load.”
**Reflect on the implementation.** A teacher summarized this stage, in which the teachers reflect whether the concepts they had chosen were covered and assessed well and suggest changes for the following year. She said,

We look at what worked and what didn’t work, or what would the learners be more interested in and how we could maybe improve the content, provocation, and the concept…

**The assumed challenges.** First, the teachers agreed that the UOIs are adjusted, but rarely replaced by new ones because of the need for resources and the impact the changes would have on the rest of the POI. Second, they drew attention to the constructivist philosophy of avoiding linear thinking and considering the experiences of the child. Third, some findings related to the fact that global benchmarking of the effectiveness of the POI is used in the absence of numerical grading. Fourth, in the absence of an explicit framework, the teachers are uncertain they are providing full coverage of the curriculum. Fifth, the teachers are assessing concepts, not knowledge, with the intention of revisiting them in different contexts when the students do not understand.

**First: New units require resources and have impact on the POI.** Most teachers declared they seldom eliminate a UOI entirely and start with a new one because of the downstream effect on the rest of the POI and the challenges in finding time and resources. A team leader warned, “When we change a unit it has a bigger effect as you know…We would have to look at what is the knock off effect” and the gaps the change creates within the POI. This year only a couple of grade levels were involved in constructing a new unit and all the teams that were interviewed were aware of them. Most teams talked about “tweaking,” like changing the assessment or parts of the central idea. A team reflected, “We haven’t designed a unit in a long time because we have revised and re-tweaked and aligned our own units… some of it to be honest is financial constraints.”
Second: Avoid linear thinking and consider the experiences of the child. The design of a UOI requires attention to the students’ background knowledge through pre and formative assessments (IBO, 2012). A teacher explained, “We got a linear understanding of how the children learn because what they learn in school is a small portion of what they are actually learning in life.” He added, “Who knows what experiences they’ve had between the end of grade or the end of unit and the beginning of [the following] grade.” This attention to students’ experiences led to variations in the depth of inquiry from year to year. Many teachers expressed this logic like in the following statement:

I think that the depth and breadth of the knowledge, how far do you need to push the kids, how deep do you want to go, actually it depends on your previous knowledge of what the children are capable of and also what they’ve been exposed to.

Third: Global benchmarking of the effectiveness of the POI in the absence of numerical grading. In the absence of internal testing scores that could be compared between classes, benchmarking the effectiveness of the POI is done at different levels that are not related to the immediate learner outcomes. Some teachers mentioned the following benchmarks: the Diploma level in grade 12; the external international tests like the International School Assessment (ISA) that assess students’ literacy in math, science, and language arts; and the accreditation visits of the IBO, Middle States Association (MSA), and the Council of International Schools (CIS). A teacher commented:

I think it is the results of the CAS and the results of the IB [Diploma] and how many students graded up to a certain amount and moving to this or that university... We had the accreditation visit(s) from the Middle States Association and the IB[O].

And the curriculum coordinator explained her role in evaluating the program:

I personally look at the recommendations of the MSA and CIS quarterly to cover their requirements. I check the ISA results to take action where the performance is lower
than expectations.

**Fourth: Teachers’ uncertainty about providing full coverage in the absence of an explicit framework.** Some teachers reconsidered their way of structuring the inquiry and questioned their confidence that academically and pedagogically they were addressing what must be taught at the grade level. A veteran teacher who joined the school a few years ago expressed her concerns: “For me, the challenges are again making sure I am getting my sequencing going for the kids and that I am really covering everything in order sequentially and a delivery that is making sense.” She expressed her dual feelings that she is being challenged and also offered the chance to be creative. The principal addressed this challenge in her following statement, “For a lot of teachers, if they are fairly new to the PYP, I think they feel a little bit insecure.” She believes the units are in place but the framework is not explicit and the teachers are transitioning all the time. She added:

They [the new teachers] feel a little bit insecure, am I teaching enough of math, am I teaching enough drama at the right time? I think it is the basic things that are not explicit in the framework and they are not directed or indicated. That’s where the school has to do a lot of work.

A new teacher confirmed the need for extra clarifications to create consistency and build up in the curriculum. She commented about working in an international environment saying: “When you have a system where the [faculty] turnover is great you need to be able to step in and have a framework … So there is gap here.”

**Fifth: Assessing concepts not knowledge with the intention to revisit in different contexts.** The planning, teaching, and assessing of the curriculum are concept-based in the PYP, which could be subjective. The teachers address the eight concepts every year through the teaching of the POI. The beliefs are that when students do not understand this year, they can move up to the following year or subject with a chance of reencountering the concept in
different forms or they are developmentally ready. Talking about the students who do not understand the concepts at the end of a UOI, a teacher explained that there is not enough time to re-teach after the summative assessment in Week 6 and the difficulty encountered by the students would be documented for the following year in the reflection section of the planner. He elaborated,

I think the idea is that at a different unit this concept is going to come up again in a different context of knowledge and their understanding that is going to develop in that unit is in some ways a make up for what they missed out in that particular unit.

Another team acknowledged that it was advised to assess the students in Week 5 and re-teach in Week 6 but only a few reported doing this. This seems to be an ongoing subject of discussion in one team, which reported: “Unfortunately when the unit ends we start a new unit, so if student A didn’t do well, didn’t understand, we leave them behind.” The team vocalized their affirmation of this statement. The teacher added, “You know we will touch on [the concept] again but really we get involved in the next unit. This is an area of discussion between us.” Another teacher clarified that this is not the case in math and language arts.

These findings were based on the naturalistic collaboration the teachers experienced when they revisited the process of designing a new UOI together. The practices and concerns mentioned above were found at different levels of the school and in general, they were considered as representative of ”the way we do things here”.

Alignment Processes and Strategies

The European schoolteachers have built their processes and strategies over the years. As a teacher had mentioned above, each curriculum coordinator brought in different ways of aligning the curriculum or parts of it. Today the teachers across the elementary school are still developing a common vision of how to plan the curriculum, which is documented in the
two sub-sections below. One lists the various alignment perspectives and the second addresses some specific strategies applied in the alignment practices used in some discipline areas. This section will conclude by reporting the impressions of the teachers about the support and expectations they require from the IBO to help them in aligning their curriculum.

**Alignment from different perspectives.** The teachers found the alignment of the curriculum a branched task that could address the refinement of the curriculum from different perspectives. The teachers mentioned some alignment processes that covered the alignment with the IBO standards, the eight concepts of the UOI, the transdisciplinary themes; and vertically within the subject areas and the learner outcomes in the scope and sequence documents.

**Alignment with the IBPYP standards.** Every 5 years the IBO re-evaluates the implementation of their Primary Years Program in schools. They send a committee composed of trained, practicing teachers from different schools and a couple of specialists to help the schools that are pursuing a self-study reflect on their practices in line with the IBPYP standards. The Council of International Schools (CIS) and the Middle State Association (MSA) re-accredit the school from pre-K to Grade 12 every 10 years. A similar project would be designed to prepare for the re-accreditation.

Teachers from different grades described the strategy applied to address the task of aligning the curriculum with the standards. To prepare for the IBPYP committee’s visit, the school, under the leadership of the curriculum coordinator, forms working groups including staff from different areas and grade levels and assigns to them different standards from the list provided by the IBO. Time is provided through in-service days and staff meetings to discuss how the school is applying those standards. The staff collects electronically documented evidence to support their claims. The reflections cumulate in ranking the school performance and suggesting recommendations to improve the situation. The findings are
collated into an electronic report that is sent to the IBO before their visit. After the visit, some commendations and recommendations are given and all staff members participate in drafting an action plan that is included in the elementary school’s strategic plan.

**Alignment of the eight concepts of the UOI.** According to the curriculum coordinator, the teachers, with the supervision and guidance of the curriculum coordinator, revisit the six Units of Inquiry of each grade to make sure all the eight concepts of the PYP framework are addressed within each school year. An experienced teacher in the PYP stated: “There are eight key concepts of the PYP that are the essential elements. We definitely all have to do those. It is part of the PYP. They are mandated.” The concepts are Form, Function, Causation, Change, Connection, Perspective, Responsibility, and Reflection (IBO, 2012). She explained that Managebac, an electronic mapping tool, is used to filter elements of the curriculum to check their alignment and detect the gaps. Managebac is a curriculum mapping software that is structured based on the planners and pedagogy of the IBO but is not produced by the IBO.

**Alignment of the transdisciplinary themes.** All six transdisciplinary themes must be covered each year. The team leaders, one from each grade, get together to look at each transdisciplinary theme and highlight what was covered by all the grades to find the gaps. As a team leader explained, the group would share their findings with the curriculum coordinator and the information would be filtered down to the other members or the elementary school faculty in general. A teacher elaborated that you can use the same theme again but at a different level:

Look at what falls under your transdisciplinary theme. So if you look at “How We Organize Ourselves” you can do “organization” at Grade 1 level. You can still teach that again in Grade 5 but at a much different level.

The introduction of Managebac software has made the process easier and the
curriculum coordinator is planning to implement this alignment process at the end of the year with the entire faculty to encourage them to use all the features of the software.

Alignment of the subject areas. According to one teacher, based on the yearly cycles defined in the school strategic planning document, every year one subject area is addressed thoroughly by the teachers across the school. This requires additional meetings in the subject committees and the professional learning communities. The curriculum coordinator explained that looking at alignment from a discipline perspective is relatively new to the school. Therefore, she had introduced a new approach. She said, “I started by disciplines because previously they were trying to align the only thing we had to show, our UOI. Not everything we teach is taught in the UOI but everything we teach is in the discipline we teach.” She structured the approach to alignment as follows.

First, define the overall expectations. With the guidance of the curriculum coordinator, representatives from all grade levels formed different subject committees. They compared the PYP general expectations in the subject areas as suggested in the model curriculum that was published in 2012 by the IBO, with the outcomes written in the report cards of the school.

Second, the teachers had to negotiate with the grade level above and below to sort the IBPYP expectations into grade levels. She explained: “[the model curriculum] was in phases so we had to sort which part of the phase is Grade 1, which part of the phase is K?” Then they had to define which parts belong to both grades. After they agreed on the progression of outcomes, they looked at the conceptual elements. She elaborated,

We had to do this by strand, because the PYP is designed by strand, so four strands in language arts, five strands in math, four strands in science. Social studies (alignment) is not done yet. Then we looked, did the concepts match? Is there a progression from what we were expecting the overall concept in pre-K? Does it grow to the same
thing? But then people take it back to their team.

Next, the teachers followed the same steps to define the learner outcomes by discipline and grade level. They verified with their teams the developmental appropriateness of the outcomes and documented them in the subjects’ scope and sequence. The curriculum coordinator explained the logic used in alignment:

We looked at our science ones, to see are we doing two sciences at every grade? Do they match the four strands we have? Then by grade level team, because my feeling is that it is aligned because our learner outcomes are aligned, I am going to design the lesson that has to come from the learner outcomes. If I choose the learner outcomes at a grade level then my lessons are going to be a progression.

Afterwards, the teachers check the alignment of the central idea of the UOI with the learner outcomes of the disciplines. They integrate language arts and math wherever possible in the UOI and address the outcomes they did not cover in stand-alone units.

The management of the process became easier with the introduction of the electronic mapping software Managebac. The curriculum coordinator explained that Managebac is designed based on the IBPYP planners and it guides the teachers in a structured sequence similar to the alignment approach she used. She commented, “That’s the order they [Managebac] take you in. This is your central idea, what are the scope and sequence learner outcomes that are going to be addressed?”

The teachers must then choose which concepts, out of the eight defined by the IBPYP, they will include in each unit in order to cover them all within the six UOI per year. The teachers discuss the assessment to make sure it is aligned with the central idea and the learner outcomes and then they design the learning experiences.

Table 3 summarizes the areas of alignment and the processes and strategies used in each.
Table 3  
Areas of Alignment: Processes and Strategies

<table>
<thead>
<tr>
<th>Curriculum Alignment With</th>
<th>The IBO Standards</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Form committees including staff from different areas.</td>
<td>- Define the alignment goals.</td>
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<tr>
<td></td>
<td>- Assign to them different standards.</td>
<td>- Use electronic files.</td>
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<tr>
<td></td>
<td>- Discuss how the school is meeting those standards.</td>
<td>- Work collaboratively with staff from different levels.</td>
</tr>
<tr>
<td></td>
<td>- Document evidence electronically to support their claim.</td>
<td>- Document immediately using the computer and the white board for the group to follow up.</td>
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<tr>
<td></td>
<td>- Rank the school performance</td>
<td>- Allocate a leader for each group.</td>
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<tr>
<td></td>
<td>- Suggest how to remediate.</td>
<td>- The curriculum coordinator plans the work and collates the report.</td>
</tr>
<tr>
<td></td>
<td>- Collate all feedbacks into an electronic report.</td>
<td>- Give evidence for each claim and locate it on the school server.</td>
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<tr>
<td></td>
<td>- After the visit, the staff draft an action plan including the resources needed, the time frame, and the allocation of responsibilities in response to the recommendations given.</td>
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<tr>
<td></td>
<td>- Define the alignment goals.</td>
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</tr>
<tr>
<td></td>
<td>- Use electronic files.</td>
<td>- Use professional learning communities and one teacher from each grade level.</td>
</tr>
<tr>
<td></td>
<td>- Work collaboratively with staff from different levels.</td>
<td>- Use the model curriculum published in 2012 by the IBO as a reference.</td>
</tr>
<tr>
<td></td>
<td>- Document immediately using the computer and the white board for the group to follow up.</td>
<td>- Use Managebac to take the teachers in the sequence of planning using Backward Design.</td>
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<tr>
<td></td>
<td>- Allocate a leader for each group.</td>
<td></td>
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<tr>
<td></td>
<td>- The curriculum coordinator plans the work and collates the report.</td>
<td></td>
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<td></td>
<td>- Give evidence for each claim and locate it on the school server.</td>
<td></td>
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<tr>
<td></td>
<td>- Use Managebac software to filter the areas to compare and contrast.</td>
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<td></td>
<td>- Revisit all 6 units per grade to make sure they covered all 8 concepts in one year.</td>
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<td></td>
<td>- The team leaders look at each transdisciplinary theme and highlight what was covered by all the grades to find the gaps.</td>
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<tr>
<td></td>
<td>- Find the gaps.</td>
<td>Use Managebac to compare the themes and cover all their descriptors.</td>
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<tr>
<td></td>
<td>- Share findings with the curriculum coordinator.</td>
<td></td>
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<tr>
<td></td>
<td>- Filter down to the grade teachers to take action.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Define the alignment goals.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Use professional learning communities and one teacher from each grade level.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Use disciplines as a base.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Use the model curriculum published in 2012 by the IBO as a reference.</td>
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<tr>
<td></td>
<td>- Turn the developmental phases of the PYP into grade level outcomes.</td>
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<td></td>
<td>- Use Managebac to take the teachers in the sequence of planning using Backward Design.</td>
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<tr>
<td></td>
<td>- Use Managebac to filter the areas to compare and contrast.</td>
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<td></td>
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<td>- Use Managebac to take the teachers in the sequence of planning using Backward Design.</td>
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<td></td>
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<td></td>
<td>- Allocate a leader for each group.</td>
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<td>- The curriculum coordinator plans the work and collates the report.</td>
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</tr>
</tbody>
</table>

Alignment strategies. After having decided on the learner outcomes by grade level
and subject area, using the curriculum model of the IBO, the teachers meet to discuss a pre-set agenda with well-defined goals. In math, for example, they would look into the alignment of the teaching language, document the way the students were assessed, the PYP learning outcomes, the concepts, and the levels of mastery expectations by grade level and concepts. One approach was applicable to multiple alignment purposes and some teachers seemed more aware than others of how it worked. The strategic approach in Table 4 summarizes the process and demonstrates the fact that alignment is an evolving process that requires time and resources but could be structured in stages.

Table 4

Practical Alignment Strategies: An Evolving Process

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Practical Alignment Strategies: An Evolving Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject areas</td>
<td>- The subject committees have one teacher from each grade level so each grade would be consulted in every discipline decision-making process.</td>
</tr>
<tr>
<td></td>
<td>- Use the learning outcomes that the teachers picked from the IBO curriculum model that are documented in the scope and sequence of the school.</td>
</tr>
<tr>
<td></td>
<td>- Define the alignment goals.</td>
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<tr>
<td></td>
<td>- Tape all the grade level curricula on the wall.</td>
</tr>
<tr>
<td></td>
<td>- Highlight in different colors the three areas “introduced,” “revisited,” and “mastered” to develop a sound progression in the learner outcomes (if aligning mastery levels).</td>
</tr>
<tr>
<td></td>
<td>- Point out the assessment level so you know what level you are targeting in teaching and assessing (if aligning assessment with mastery levels).</td>
</tr>
<tr>
<td></td>
<td>- Check the language used to refer to technical words like the difference between decimals and fractions (if aligning the subject’s language).</td>
</tr>
<tr>
<td></td>
<td>- Share test papers to set the benchmarks for grading from “developing” to “proficient” (if aligning grading).</td>
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<tr>
<td></td>
<td>- Divide the teachers in 2 groups: One starts the discussion from the highest grade level down and the other starts from the lowest grade up. They would meet in the middle and the adjustment is discussed.</td>
</tr>
<tr>
<td></td>
<td>- Use other benchmarks like the Ontario Math or the Common Core State Standards to compare the existing scope and sequence document with the suggested content and skills per discipline and per grade level.</td>
</tr>
<tr>
<td></td>
<td>- Make a proposal with the adjustments and pass it down to the grade level teachers to discuss.</td>
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<tr>
<td></td>
<td>- Discussions are held between teachers at the grade above and below to add, subtract, or switch the learner outcomes.</td>
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<tr>
<td></td>
<td>- After 3 years of using external standards, check what works for the school and re-adjust by creating your own standards.</td>
</tr>
</tbody>
</table>

Conclusion
The teachers’ perceptions of collaboration, curriculum, and alignment discussed previously reflected the experiences acquired through the naturalistic approach in which they designed and discussed curriculum issues. In the absence of an explicit IBPYP framework of content and alignment guidance, the European school’s achievements in the subject of curriculum design and alignment did not “just happen.” Rather, the teachers had to build a genuine desire, understanding, and appreciation of collaboration. Following their example, it was clear that some pre-requisite conditions were necessary to facilitate the integration of collaboration as a culture, leading to a common philosophical understanding of the curriculum and the process of developing consensus in decision-making.

The curriculum processes and strategies in curriculum alignment were born from group experiences and individual initiatives. Teamwork in the selection of the learner outcomes on the side of the design of integrated UOI increased the buy-in effect and the fidelity in the implementation by the grade level teachers. A debate around teachers being designers or implementers of the curriculum arose, raising questions about the role of teachers and the guidance they need in curriculum design and alignment.

In the matter of using external content standards, some teams were satisfied with what they had and they referred to the scope and sequence as the standards. Other teams found the external standards helpful in guiding the structure of the school curriculum and expected to gain time and reassurance of full and sequenced coverage.

The U.S. School

The U.S. school is around 60 years old but was quite new to the IBO system, with 8 years of practice in the IBPYP framework. Visitors entering the school would notice in the entrance a display of the POI and the attitude words, which were displayed on the walls around the school. During the observation visit a teacher was heard asking a child to reflect on his behavior at recess and a class was interviewing the receptionist about her culture.
However, little of the PYP language was heard around the school. There was no direct indication in the classrooms of the transdisciplinary themes and units each classroom was studying. The students were applying inquiry and were learning the attitude words without awareness that their school curriculum followed the IBPYP framework (classroom visit). The students were free to look for different resources during inquiry projects and the learning was structured. A foreign language was taught from K to Grade 5 based on a rotational cycle basis between foreign language and global education. According to the school web site, “This part of the rotation will incorporate international units of inquiry and foster digital and informational literacy.” In addition, the school positioned itself on the web site as having the most extensive foreign language program in the county, as using inquiry to construct knowledge, and encouraging community involvement and collaboration. The school’s mission was to empower all “to achieve their highest potential in a diverse and ever-changing world” (U.S. school web site, 2015).

**The Teachers’ Background**

Fifty fully certified classroom teachers worked at the U.S. primary school with 14% who have 0-3 years of teaching experience, 34% with 4-10 years, and 52% with 10+ years. The school had 10% teacher turnover rate and the majority of the teachers were Americans.

In this research study, 12 out of 15 respondents were qualified to participate and their answers to the survey were the key representation of the teachers at this school. The teachers were exposed to the curriculum of multiple grades. One teacher had taught all the grades from K to 5, five teachers had taught three or more grades, four had taught at least two grades, and two had taught only one grade. The principal shared her strategy of moving teachers around to guarantee that each grade had at least one teacher who taught the level above and one who taught the level below to facilitate alignment. Six of the participants in the survey had a Bachelor of Arts (BA) degree while six had a master’s degree. The teachers
were experienced in teaching, as the majority of the teachers (nine teachers) had over 12 years of experience in teaching and three had over 7, but their experience in the PYP varied from six teachers who had taught for 7 to 11 years in the PYP, and five who had taught 2 or more years. The majority of the teachers have had in-house training while a couple had none. Table 5 shows the IBPYP courses the teachers mentioned in the survey and the number of participants who attended. The teachers were involved in the activities and responsibilities at school where 10 out of 12 teachers had said they had been involved in at least two additional roles other than teaching throughout their employment at the school.

Table 5

*Training Courses Mentioned by the U.S. Schoolteachers*

<table>
<thead>
<tr>
<th>Training Courses</th>
<th>Number of Trained Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making the PYP Happen</td>
<td>1</td>
</tr>
<tr>
<td>The Role of the Coordinator</td>
<td>1</td>
</tr>
<tr>
<td>IBO Regional Workshop/Conference</td>
<td>2</td>
</tr>
<tr>
<td>Assessment in the PYP</td>
<td>1</td>
</tr>
<tr>
<td>In house training about various topics</td>
<td>5</td>
</tr>
<tr>
<td>Introduction to the PYP</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>2</td>
</tr>
</tbody>
</table>

**Teacher Assumptions about Collaborative Planning**

Collaboration in the PYP was synonymous to working together at the U.S. school. Nine teachers mentioned it either in the context of working with the students and parents or with other teachers horizontally and vertically. One teacher referred to structured planning time while another paired collaboration with sharing. One teacher was inclusive, saying: “All staff, parents, students, and school community work together to make the Primary Year
Programme successful and effective. As they say, ‘it takes a village!’” Another reply was more elaborate. The teacher said, “Collaboration would mean working together with the goal of achieving the best outcome possible for all involved. This might mean working on developing Units of Inquiry, planning lessons, sharing data on assessment results and so on.”

In fact, the school has scheduled different forms of collaboration in monthly blocks of professional learning team (PLT) meetings where one grade level was free to meet all day with the IB magnet coordinator or the school curriculum coordinator, who was in charge of the state curriculum and data analysis. Other opportunities for collaboration were available during Early Release Days, Teacher Workdays, leadership meetings, and staff meetings.

**Collaboration is for a purpose.** All the U.S. School participants coupled every answer in the survey with justifications or purposes for collaboration. The purposes most commonly described were outcomes, developing global perspectives, building a school wide program, planning student centered instruction, creating meaningful inquiry, integrating disciplines, and sharing learning and reflections.

*Outcomes related.* Some purposes for collaboration described by the U.S. School participants were related to achieving best outcomes. The IB magnet coordinator explained that after each county quarterly test, the administration and the teachers collaborated to address the variations in the results. She explained:

The curriculum coordinator would look at the results by grade level, by schools. Then, during our monthly school improvement meeting, we will look at the results, see the trends, (and) check whether we have made an improvement. We discuss what we need to do to intervene.

*Develop a global perspective beyond the classroom.* Collaboration was linked to working with the students to “create connections and make an impact on the world.” The connection between what the students do in the classroom and its implications for their daily
lives was mentioned in the vision statement of the school and was echoed in the response of one teacher. She described, “Working together with our students to understand how connections between what we are doing in the class can work around the world, and how we can collaborate with others to make the world a better place.”

The school vision stated: “Our learning reaches beyond the walls of our school and inspires us to explore and understand our world.”

**Build a school wide program.** Some teachers mentioned the collaboration work to create alignment across the school through vertical and horizontal teacher collaboration meetings. They described their collaboration purpose as “Working vertically and within a level to build a school-wide program that exceeds the goals for each area of IBPYP.”

**Plan student-centered instruction.** The principal stated, “Our students are the heart of our work,” which mirrored what a teacher revealed in her reflection on collaboration. She said, “Collaboration is at the heart of the PYP. We must collaborate to plan our instruction and assessment in a student-centered environment.”

**Create meaningful inquiry.** The teachers were wondering how they should teach to cover a global view in the inquiries. The discussion was taking place at different levels of the school. The IB magnet coordinator reflected on a chat she had with the principal saying, “The tough part is matching or really understanding our curriculum and diving at it by grade level and making our assessment, making our inquiry activity rich.” This concern was reflected in the statement of a teacher who said that collaboration is “Working with peer teachers on and across grade levels to plan units and curriculum that teaches all points of inquiry.” Some students at the U.S. school were accustomed to conducting inquiry in the classroom. They were observed looking for resources and they asked in depth questions.

**Integrate disciplines.** Some teachers were aware of the transdisciplinary nature of the IBPYP framework and the need to collaborate with subject teachers to create a cohesive
experience for the students. One teacher explained:

Collaboration in the PYP means to me that the majority of the day is focused upon one planner and all learning grows from there. Art, Music, PE, Media, Spanish all help support that learning. Teachers across all contents work together to create this cohesive learning experience.

The idea of integration of disciplines was reflected in the teacher’s understanding that every teacher dealing with one grade level would use the same planner. In reality specialist teachers build their planners based on the concept addressed in the central idea of the Units of Inquiry. They cover some of the learner outcomes of the units they cover.

Sharing learning and reflections. In one personal discussion with a teacher, she explained that the veteran teachers who were trained in the PYP were sharing knowledge about its structure and philosophy. A teacher mentioned this collaboration in her following statement: “It is a structured planning time where my grade level team shares ideas, understandings, and reflections on our PYP.” Most of the training at the U.S. school was done in-house with the support of the curriculum coordinator.

Collaboration challenges. Teachers planned collaboratively and they started to gain confidence in handling the requirements of the state and Common Core State Standards. The IBPYP magnet coordinator explained, “This is our third year with common core. So we felt we have a good handle on it” so recently, the focus of the school included the IBPYP framework. Some of the collaboration challenges were as follows:

Lack of training. The principal and her administrative team tried shuffling the teachers on different grades to gain a wider understanding of the curriculum. This has created a further need to collaborate in order to share expertise and better understanding of the PYP framework. The IBPYP magnet coordinator confirmed that, “Everyone has been moved around because the curriculum is new to some people, because they have never taught
it before.” She added, “I feel like a lot of our teachers are new to the IB and they need a lot of help; and that we can focus on next year.” In fact, the curriculum coordinator herself was new to her job. A senior administrator for the IBO program in the county confessed that the most senior IBPYP coordinator in the county had no more than 2 years of experience in the IB program.

**Time to manage the state and the IBO requirements.** The priority of the school was meeting their state and county objectives. There was pressure to focus on performance and to abide by the IBO philosophy and structure. The IBPYP magnet coordinator reflected on the current focus, “Dive into it [the curriculum], what does it say and what we’re really supposed to be teaching, and what does it mean to teach from an IB lens?” She added, “It is a huge job to do the curriculum in America, it’s huge.” The changes in the state laws took most of the teacher collaboration time. She explained,

Last year in third grade, we had the “Read to Achieve” law and this year we have a lot of changes in the reading, so really we cannot take over. For better or worse, this is how we did things.

Optimistically she concluded, “It is a journey we are not there yet, we are not done. I think we are never done, but we are far more than where we were at the beginning of the year.”

The findings of this section could not be further investigated and validated because of the withdrawal of the school from the research.

**Teachers’ Assumptions about Curriculum and Alignment**

The teachers considered the curriculum from different perspectives. They saw it as a framework, as content, as an approach, and all that is taught at school. The alignment for them was mostly related to building in a sequence, as scaffolding instruction, and some linked it to state standards.
Perceptions of curriculum and curriculum alignment. The teachers believed the purpose of curriculum was to guide instruction. They considered it as a framework that would shape the education of their students. A teacher defined it as follows: “Curriculum is the framework of objectives we have for students from the time they enter school until they graduate.” Another teacher framed it as a guide, “The curriculum should provide a framework to guide the instruction in an educational setting.” For others it was linked to content or “the material that needs to be taught to the students;” “a course of study;” or simply “what we need to teach.” For some, it was what the state dictated. One teacher wrote, it is the “content that the State deems as important to teach the children. They build on each other.” The perceptions of some teachers that a curriculum was an approach reflect the IBO philosophy. A teacher considered it as a balanced approach using the metaphor of a balanced meal saying: “Curriculum is the educational ’meal’ that we give to our students. It needs to be balanced and age appropriate for students. It spans across all disciplines.” A teacher looked at the curriculum as a teaching method. She answered:

Curriculum is the means by which teachers teach skills, information, and ideas to their students. Curriculum is more than just a list of objectives. It is also about the approach to learning based on an educator's understanding of how the students they teach learn best.

Another teacher used a metaphor to refer to the curriculum as a framework but he added the concept of mastery: “The skeleton of teaching topics and objectives to be mastered by students.” Another teacher recognized the link to the subject matter and content but did not limit it to school content, believing it could “encompass the whole child.” She said, it “creates cultural enrichment and understanding” because “it embodies both academic and personal goals.”

Curriculum alignment. Alignment was understood as a “building on” concept.
Some linked it to the sequence of content and concepts to “provide a solid content foundation for the subsequent grade level. They wrote, “The content and concepts investigated each year build upon each other in a meaningful and logical manner” and “Vertically - making sure that what we are teaching builds on the concepts from the previous grade and will be expanded on in the next grade.” This sequence of content and objectives was referred to as an assurance that “all areas are being taught.” To this purpose, some teachers referred to the alignment of their teaching with the state standards to, “Make sure what we're teaching matches what the government wants us to teach” and “You are teaching the correct concepts/objectives.”

Curriculum alignment to some teachers meant, “having the horizontal and vertical knowledge of each content” so teachers could scaffold instruction. A teacher explained, “We need to know what the end expectations are and then provide the scaffolding for student learning and engagement.” Another one looked at alignment from the perspective of the students who would “make sense of the part to the whole from K-12.” One teacher acknowledged the multiple perspectives on alignment as she summarized,

We align our curriculum horizontally, integrating objectives. We align vertically to ensure all goals are taught and built upon. We also align our curriculum to instruction and then assessment.

Curriculum alignment is often perceived from different lenses. Here, the idea of progression from one level to another to make sense of the curriculum was dominant.

*Teachers are responsible for curriculum alignment with the guidance of the administration.* When asked who at the U.S. School was in charge of curriculum alignment, seven out of 12 teachers considered themselves in charge. Some put it simply: “Teachers.” The IBPYP magnet coordinator confirmed that by saying, “Really it is teacher led.” Others recognized the support of the administration by providing time and resources saying, “All teachers - but administration needs to provide time for vertical alignment to happen” and “All
Four teachers asserted that administration, curriculum coordinators and teachers have the responsibility for curriculum alignment. One teacher wrote, “Everyone! Teachers, IRT (instructional resource teacher), Administration, Magnet Coordinator” while another one explained the role of the IB coordinator stating, “Administration is mostly responsible - our IB coordinator does it at our school.” One teacher recognized responsibility of the State but still acknowledged the accountability of the teachers. She explained, “Ultimately, the State in how they write the objectives. However, as teachers, we are responsible to make sure that our activities and how far we go into the content is aligning properly.”

**Barriers to curriculum alignment.** Although teachers accepted and were willing to take responsibility for curriculum alignment, barriers were related to sorting priorities and allocating free collaboration time, lack of training and resources, the different perceptions of the IBPYP framework, the electronic documentation system, and the absence of collaboration between schools.

**Sorting priorities and allocating collaboration time.** The issue of time was mentioned in the collaboration challenges section. It relates to the free time the teachers need to collaborate on both aspects of the curriculum: the state standards and the IBPYP framework. The IBPYP magnet coordinator explained that the time this year was spent on understanding the changes imposed by the state in the field of reading and adjusting to the Common Core State Standards. Therefore, working with the teachers on the IBPYP concepts and framework had to wait for next year. She said, “A lot of our teachers are new to the IB and they need a lot of help and that we can focus on next year, but it wasn’t the focus this year.” She added, “The kids are tested and we have to prepare them too, so it is tough.”

A senior administrator for the IBO program in the county recognized the issue of time. She clarified that the requirements of the state and the benchmarking of the county set
the priorities for teachers. She explained that every 4.5 weeks the benchmarking activities
take 2 days away from teaching so the students can be tested and compared with other
children in the district. The teachers spend time to prepare for those tests and spend time
discussing improvement plans. The impact of these tests on teacher evaluation is another
element to consider in setting teacher priorities. The magnet coordinator explained, “The end
of grade test does go on our teacher evaluation, Standard 6 of our teacher evaluation is
standard grade tests,” which implied the importance of student achievement as a priority.

*Lack of training and resources.* Curriculum design requires understanding of the
IBPYP framework that was not very clear in the mind of many teachers. Very few people got
training beyond the introductory level that was done in-house. The IBPYP magnet
curriculum coordinator elaborated, “There was the recession, and we didn’t have enough
funding so we didn’t go to training for a couple of years.” She disclosed that she worked part
time and only 50% of her schedule was reserved for the IBPYP magnet work. In addition,
her experience was developing on the job and she would appreciate any support she could
get. In commenting on the steps the school used for alignment, she stated, “The principal and
I talked about where do we go from here that we have this? I don’t quite know to be honest.
I think I need help with that. If that is something you have experience in.” She added, “I am
not a curriculum expert, she (the curriculum coordinator of the school) is. She can provide
support if there are questions or concerns. I can provide what is the structure of IB and how
we can incorporate that.”

A senior administrator for the IBO program in the county also referred to the lack of
time, resources, and training, as she explained that the Common Core State Standards and the
state standards mesh with the IBPYP, but that the teachers do not always see the connection
because they do not have the time or the training to see it. She added, “Budgeting is in the
hand of the district and the priorities are decided at that level.” They have a limited number
of teachers who can participate in professional development.

_The different perceptions of the IBPYP framework._

The IBPYP is not clear enough to guide the teachers and coordinators in their alignment. The IBPYP magnet coordinator wished to know more about how the IBPYP is applied in other states. She noted that the training workshops held by the IBO do not apply to all contexts. From experience, she found challenges in transferring the IBO presenter’s alignment advice to her school. She shared the following example,

The IB presenter was from Canada and I was trying to explain to her how we have to vertically align our POI. It was confusing, because according to their system, things were quite different from what we are required to do. So when I asked the question: how does this work for us? … It is tough, really tough. So I am interested to know how other systems do things.

_The electronic documentation system._ The IBO provides a model planner for teachers but the schools have their own documentation technologies that would allow collaborative planning and adjustments to the curriculum. According to the IBPYP magnet coordinator, the teachers could not access the planner at the same time and they were finding ways to make it happen. They were using GoogleDocs, a web-hosted document-sharing platform, in their planning sessions. She said, “Our planners are on our network -on our “Shared” network- but only one person could go there at a time, so “Google doc” can do a little more.”

_The absence of collaboration between schools._ The IBO facilitates sharing planners and experiences on their website through the use of the Online Curriculum Center (OCC) by member schools. According to a senior administrator for the IBO program in the county, all IBPYP teachers had access to the OCC. She explained that she did not encourage sharing planners between the schools because the aim was to create buy-in by letting the teachers
develop their own units. In reality, some teachers told me they did not have the time to look at the OCC and they needed guidance to understand the structures of the planners.

**Teacher Challenges in Planning their Units of Inquiry**

The teachers did not have a chance to be interviewed in grade level teams about their experiences in planning the POI collaboratively because the U.S. School decided to withdraw from the research study. The findings so far derived from two interviews held with the IBPYP magnet coordinator and a senior administrator for the IBO program in the county and some personal discussions with the teachers.

Some teachers were quite new to the process of designing UOI. Some were still trying to understand how to structure a central idea and how the planners worked. A few teachers were anxious whether the way they were doing things was right. There were many challenges in developing planners. Assessment had to be linked to the standards, not the concepts covered in the UOI, and social studies and science content was prescribed by the state. The scope of coverage was large, which added to the difficulty of integrating other disciplines in the POI.

**Developing planners.** According to the IBPYP magnet coordinator, the planners were still in a developmental stage. She stated, “You can have access to our planners but they are not great. Some of them are completely done but other grade levels are not. We need a lot of progress.” She confirmed that she was trained to use Backward Design by starting with the outcomes, and that she was confident that the school curriculum coordinator does as well.

**Assessment is linked to standards not concepts.** The teachers followed the county quarterly benchmark testing and the state end-of-year testing requirements. In answering the question whether the school assessed concepts at all, the IBPYP magnet coordinator was silent, then answered, “So… I don’t think that there is a great level that we focus on
strongly.” She reflected, “There is so much pressure with testing and not from the administration but from where we are.” She expressed the concern of addressing students’ needs as she reported on a conversation she had with her teachers about relying too much on official testing, asking, “Let’s take a look at what we are assessing, are we meeting the needs of our children, are we understanding what’s in there and how they can tell us?” She concluded by wondering, “How do you do when you have two big requirements to meet. So I am not quite sure where to go with this. It is something I thought about.” However, the school has had discussions about concepts and the ways to genuinely integrate them in students learning. The IBPYP magnet coordinator reflected,

In terms of concept knowledge, in terms of are we really helping kids understand what it means, are we really inquiring into the inter-connectedness of human making of some community. Are we really talking about societal decisions with them? So each of these little phrases, we wanted them to really understand fully but stay true to what we have to teach from the front of.

Although this is a challenge, she thought the school was on the right track. She added, “So there is a balance there where we have to align, what we are to teach, and we are to test with what we believe is an IB. It is a challenge, it takes a lot of time.”

**Large scopes of social studies and science are prescribed by the State.** The POI did not allow the school to cover all the requirements of the standards, so many units ended up as stand-alone units. The IBPYP magnet coordinator confirmed that the schedule allowed the coverage of state standards, Common Core State Standards, and the POI. Four science units and four social studies units were covered per year per grade level but “not all our science and social studies fit in the planner.” She explained, “In the States, math and language arts are common throughout the country but science and social studies are not. They are done State by State unless a State adopts the Common Core.”
To cover all the State standards, stand-alone units were taught without developing central ideas and lines of inquiry. She gave the example of teaching the needs of plants and the types of soil, and expanded, “We don’t necessarily come up with essential (central) idea and lines of inquiry. We teach it through inquiry and investigation. But we don’t fit it into “How the World Works. It doesn’t fit very well. It is a stand-alone.” According to her, the stand-alone units could run simultaneously and the teachers tried to fit them in their schedule.

**Subject integration is a challenge.** A senior administrator for the IBO program in the county reported that it is common to hear from members of the IB State Association that the difficulty of integrating subjects, especially specialists like Physical Education, Music, and Art, leads to offering a core, and more would be added in if possible. She related that issue to the limited number of specialists serving a large school and scheduling one specialist for too many classes. She explained that a rotation system was used and the students do not get enough exposure to benefit them and the teachers would be challenged to plan for so many classes. The IBPYP magnet coordinator explained that some areas were easier to integrate, especially language arts. She gave an example; “This year we have most of “How We Express Ourselves” as language arts units, for core.” Talking about beliefs and culture could be reflected in the literature and it is possible to integrate in different ways.

Although the challenges described above were mostly systemic, they could be partly related to the lack of experience in the IBPYP, but also to the difficulties of merging two systems without enough training or guidance.

**Alignment Processes and Strategies**

The U.S. school’s primary focus was on the alignment with the requirement of their state and Common Core State Standards. The IBPYP magnet coordinator admitted using one strategy that worked without knowing what the next steps could be.

**Alignment from different perspectives.** The IBPYP magnet coordinator referred to
alignment in three ways: alignment of the state curriculum with the IBO requirements, alignment by transdisciplinary themes, and alignment of assessment with the central idea. In the survey, some teachers wrote about the alignment of instruction with the written curriculum, of assessment and instruction, and of objectives and planning across the grades. None of the teacher ideas were investigated.

**Align the state curriculum with the IBO requirements.** To satisfy the IBO requirements for re-accreditation, the teachers had to discuss the mandatory standards of the state and Common Core State Standards to forge them into units that have concepts and cover parts of the disciplines. The content that did not fit was dealt with as stand-alone units.

**Alignment with transdisciplinary themes.** The school considered that all the descriptors of all the transdisciplinary themes must be taught within K-5. In addition, each grade level must teach all six themes every year.

**Alignment of assessment with the central idea.** An attempt was made to design summative assessments independently from the official state and county tests to understand where the students’ needs were and find various ways to administer assessment of concepts not content.

**Alignment strategies.** The U.S. school has used one strategy in aligning their state curriculum to the IBPYP framework. They focused on covering all the elements of the transdisciplinary themes and the development of a logic that would provide the students with an understanding of each of the themes. The principal mentioned the effort of moving teachers around in order to get, at each grade level, a teacher from the grades above and below so they could build awareness of the whole curriculum through their collaborative planning.

**Alignment with the transdisciplinary themes.** Curriculum alignment was done at grade level first to enhance the understanding of the requirements of the state curriculum.
Then, all grades participated in dividing the transdisciplinary themes’ descriptors among the grade levels. The IBPYP magnet coordinator had one full day of planning with the grade level teachers after they had accomplished the following steps with her during their Professional Learning Time or their planning week. First, they took the State curriculum objectives and compared them with the transdisciplinary themes’ descriptors to match the best descriptor to the units they had. She described the process as messy and confusing at first but the teachers eased into the process once they got the idea of what they were doing. She said,

We took the paragraph of the descriptor, so we took “How We Organize Ourselves.” I think there are 5 descriptors in it. For each grade level we looked at the [State] objectives that we were given that we chose to fit under that Unit of Inquiry, then we chose which descriptor fits the best with that. Then we brought that information to the whole group planning session.

Second, the grade levels came to the group meeting with six units each to form the school’s POI. They defined the descriptor of the transdisciplinary themes they had chosen, formulated their central idea, and designed the learning experiences they wanted their students to learn. The teachers split into six groups to tackle the six transdisciplinary themes. Each group had one teacher from each grade level. She elaborated, “We basically discussed how we give our students from kindergarten through 5th grade understanding of (each) theme.” She added, “We changed things around … For some of the lower grades we basically overhauled what they have done and started over” and made sure to cover two or three concepts per unit and all of the eight per year and grade level.

The IBPYP magnet coordinator gave credit to the alignment process with the state standards because it gave the teachers an opportunity to discuss, understand their curriculum, and see the progression in the program. She reflected that it was a useful step in preparing
the teachers to understand where to fit the content of the state standards into the PYP units. She said,

It was helpful for us to see the reason we teach this in first grade so in second grade we can teach that and so on. This is what we expect them (the students) to come with and this is what we expect them to leave with, so when they come to you that’s why they don’t know this. So, it was a great conversation.

Conclusion

The US school applied collaboration at different levels and found many challenges related to the lack of time and resources to manage the requirements of the two systems of the IBO and the state. The priority in time allocation was related to benchmarking activities in the area of preparing students for testing and the remediation actions that followed because teacher evaluation was linked to student achievement. Teachers referred often to the content and mastery when discussing the curriculum and the alignment discussions took two directions: alignment with the state standards and Common Core State Standards and the framework of the IBPYP. The teachers recognized their responsibility for curriculum alignment and expressed the presence of many barriers. They lacked expertise and understanding of some IBPYP practices and relied heavily on in-house training and sharing knowledge. Little access was given to other schools’ planners and the magnet coordinator recognized the differences in context and application of alignment between different states. The school suffered from the lack of advanced technology to document and share planners, and had some conflicts with the way the IBO practices were implemented, such as assessing concepts, promoting international mindedness, and using planners as guiding tools. The IB framework worked as an add-on that the school used to channel their delivery of state requirements.

Conclusions of the Findings
In the naturalistic framework of teachers’ planning stages, teacher practices were studied in two different contexts of IBPYP schools; one that operated in an independent setting, and one in a publically funded school that followed state standards, to comprehend how the teachers collaborated to align their curriculum.

At the “platform” stage, teacher beliefs about collaboration showed a strong appreciation in both schools for teachers working together to achieve a purpose that was often in line with the IBO philosophy of child-centered inquiry. At the European school, there was a strong dependence on the IBPYP framework with emphasis on four out of the five essential elements of the PYP: knowledge, concepts, skills, attitudes, but the teachers never touched on the “action” element. The U.S. schoolteachers focused on performance and assessment. The teachers in general considered the lack of time as a challenge for collaboration and alignment activities. In terms of curriculum, the teachers in both schools considered the curriculum as a framework that builds from grade to grade, but the difference was that the European schoolteachers had a stronger focus on the importance of concepts and they built their curriculum and assessments on them. In the U.S. school, the teachers had a considerable concern for the assessment of content, the alignment with the state standards, and the remediation to improve performance.

At the “deliberation” stage, the European school believed in the culture of collaboration in a safe environment based on mutual respect, where having a common understanding of the IBPYP philosophy, modeling, leadership, knowledge of the curriculum, and continuous professional development, facilitated their work. In discussing the design and content of their POI, they believed in the importance of making consensus, referring to experts, focusing on the needs of the students, taking time to reflect, and the freedom of implementation. In the U.S. school, the IBPYP magnet coordinator talked about alignment as a messy process that ended in working harmoniously and building consensus
based on the mandated content requirements of the state for each grade level.

At the “design” stage, the teachers showed some confusion due to the lack of explicit directions from the IBO on how to align a curriculum. The European school had to adopt external standards in the subject areas of science and math in order to sequence and cover the content by grade levels. They based their scope and sequence documents on the curriculum model that was published by the IBO in 2012, while in the U.S. schools used the state and the Common Core State Standards. The efficiency in applying the IBPYP requirements was linked in both schools to many barriers related to the different expertise level of teachers, the divergence in the interpretation of the PYP framework, and the lack of time and resources. In the European school, there was a feeling of not covering all student needs while in the U.S. school there was a lack of confidence of what the PYP framework looked like. The content coverage was rich and demanding in the U.S. school while it was a subject of debate in the European school, which was considering adding stand-alone units.

Assessment was a considerable difference between the two schools. The European school assessed concepts and the teachers were lenient in their response to the results of assessment, while the U.S. school was under the pressure of the state testing, the county’s regular benchmarking and remediation, and teacher evaluation. At the “design” stage, the teachers worked collaboratively to design and re-design their curriculum with a great awareness of the domino effect of making changes at any levels of the curriculum. They used consensus and experimented with different processes to align the curriculum. The table in Appendix F summarizes the findings from both schools.
Chapter Five: Discussion of Findings and Recommendations

This doctoral study aimed to answer the question: “How do IBPYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program Of Inquiry?” This research differs from most previous studies on curriculum alignment in the IB programs, which have generally addressed alignment at the Diploma level, either to satisfy the universities’ entry requirements (Conley and Ward, 2009), or to facilitate the alignment with national/state standards (Faas and Friesenhahn, 2014). Some addressed the transition between the IB programs (Cowie de Arroyo, 2011). Numerous studies addressed either teacher collaboration (Bruffee, 1984; Datnow, 2011; Garmston, 2007), inquiry (Bebb, 2004; Guba and Lincoln, 1985; Inoue and Buczynski, 2011), teacher perceptions (Cook, 2015; Ireland, Watters, Brownlee, and Lupton, 2012), or the challenges of integrated curricula (Beane, 1997; Connell, 2010; Drake and Burns, 2004), but seldom did any study combine these concepts to understand how teachers in a naturalistic setting negotiated the curriculum they were in charge of designing and aligning collaboratively. The choice of two IBPYP schools, one international, private, and independent from national academic requirements in Europe, and the other a publically funded magnet school in the U.S., was to create two settings where the same system of the IBPYP was applied using solely the IB standards or combined with the local state standards. The objective was to understand the strategies the teachers used in the two settings and how the IBO guidance in the form of published documents and standards were helping the teachers to align their curriculum.

The purpose of this research study was to explore how IBPYP teachers structure a curriculum to harness alignment based on their understanding and the guidance they received. The aim of this research was two-fold: 1) to explore how IBPYP teachers address curriculum alignment during their collaborative planning, and 2) To outline the strategies used by schools that follow the IBPYP standards alone, and those that have another layer of state
standards with which to align their curriculum. This study aimed neither at comparing schools, nor at evaluating teachers. Instead, its goal was to understand the practicality of the PYP system as lived experiences in schools, and how this system was perceived to have offered a structural framework that supported the design and alignment of school curricula.

The initial intention of this study was to understand the various meanings the teachers gave to the challenges of vertically aligning their curriculum and to share imperfect experimental ways that could assist the teachers in this endeavor. Therefore, this research used a qualitative case study design that is context bounded to each of the schools, and the interpretive postpositivist paradigm, which according to Creswell (2013) addresses “the meaning individuals or groups ascribe to a social or human problem” (p. 44). When teachers work collaboratively, they become part of a school culture in which group perspectives are likely to stand out. The interviewing approach in this study opted for group interviews to simulate the naturalistic setting where grade level teachers interact to design and develop their curriculum.

In this process, a vast amount of rich information was gathered around the four sub-questions that addressed the assumptions the teachers had about collaborative planning and curriculum alignment, the challenges they had in planning POI, and the strategies they used in curriculum alignment. The majority of the participants found the alignment guidance in the IBPYP documents and workshops insufficient or ambiguous. One coordinator commented on the IB training she received saying, “I went to the IB coordinator [course] but it is mostly the PYP coordinator where you just have to see that all is done [documented]” and the other coordinator repeatedly wondered about the next steps. All participants experienced challenges that either confirmed other research findings or added a new perspective that could be informative or beneficial to many teachers, administrators, the IBO organization, students and parents, and the research field. This study aimed to provide
insight to the stakeholders, so that they may understand the struggles with the IBPYP system and propose alternatives.

Mathews and Hudson (1994) developed a model to enable teachers to evaluate their collaborative work in relation to school plans and broader national or state frameworks. The intention of this study was not as broad and focused on the teacher experiences as they collaborated to design and align their curriculum. By designing this research from Walker’s (1971) naturalistic framework of teachers’ planning stages of Platform-Deliberation-Design, this study shed light upon how the teachers operated collaboratively, their perceptions of curriculum, and the challenges they experienced in designing their POI, and the strategies used to align it. The remainder of this chapter discussed the findings of this research in relation to earlier research and theory, and practical recommendations, the limitations, and suggestions for future research.

**Contributions to Research and Theory**

This study asked teachers to reflect upon their combined experiences from designing to aligning their curriculum collaboratively in two IBPYP schools. The findings from this study can be compared to the results of previous research studies mentioned in the literature review, which investigated the different perceptions around curriculum and alignment, the concept of collaborative planning and the challenges perceived during teacher collaboration, and the alignment strategies experts and teachers used to address different types of alignment.

**Congruent Findings**

Teachers in the two schools confirmed the positive impact of collaboration on their work and on the implementation of the program. Connell (2010) reported similar findings in her research on the factors that influenced the implementation of the IB program in Prince Edward Island. The teams in this study confirmed that collaboration made the program richer and one teacher confessed, “Collaborating with other professionals also affirms that as a
teacher you are on the right track.” The U.S. school counted on the trained teachers to support and guide the others through collaboration, and the European school went through multiple rounds of collaboration vertically and horizontally to discuss planning and aligning the curriculum.

One of the emerging themes in this study reported teachers’ belief that collaboration does not just happen; it requires pre-requisite conditions. Rorty (1979) suggested that collaboration is a structured social activity and it requires foundations. In accordance with this view, the teachers in this study admitted that collaboration must start in a contrived, or mandated way, because it is not a natural behavior for everyone and it requires preparation. The pre-requisite structures mentioned in the European school could be interpreted using the four frames Bolman and Deal (2008) designed to understand organizations. The human frame included learning how to stay on track, coming prepared, and understanding the pedagogical background of the curriculum; the structural frame included logistical support, like providing continuity in teams, scheduling collaboration time, and setting protocols; the political frame reflected treating collaboration as a management strategy for decision-making and increasing teacher buy-in, and as a leadership model that the principal described as “filtering across the troops.” The symbolic frame was reflected in the creation of a safe environment where reflection on practices led to positive change.

This study considered Rorty’s social perception of structure in collaboration and suggests looking at collaboration from the lens of accountability. This would lead to questioning the systemic demands and their influence on the social structure. The teachers in the U.S. school had collaboration meetings to discuss the outcomes from state testing, county benchmarking, and remediation actions. Their priority was aligning their curriculum to the state standards and the IB requirements. They focused primarily on understanding their curriculum, while the European school teachers spent their collaboration time on designing
and negotiating the outcomes, content, and experiences to provide students in their curriculum. The magnet coordinator in the U.S. school reflected on this saying, “It is a huge job to do the curriculum in America, it’s huge” because of the rigid requirements and the changes in laws. “So really we [IB] cannot take over. For better or worse, this is how we did things.” The structures of collaboration at school whether viewed from the social or accountability lens would help in understanding the culture and priorities of a school.

Walker (1971) and Rorty (1979) discussed the construction of knowledge as a process of collaboratively justifying beliefs by challenging each other’s assumptions and biases. This study used Walker’s theoretical framework of teacher collaboration to allow the teachers to discuss their beliefs and practices in a naturalistic environment. They safely agreed or argued during the interviews to report their beliefs and practices in the areas of curriculum. One of the findings of this research confirmed the assertions of Walker and Rorty that in collaborative planning, there is no absolute knowledge or a correct track, but rather a continuous negotiation through which the participants build the plans of their actions.

Teachers and administrators in the European school confirmed the absence of one reality or one truth, which justified the researcher’s choice of Stake’s interpretative approach. At different occasions, teachers approved the IBO’s claim that “other people, with their differences, can also be right” (IBO, 2010). A teacher reflected, “I don’t think anyone of us knows always the best thing” and the principal added, “there is no such a thing as a stupid idea or bad idea, but just an idea. So, have that respect amongst the group and tolerance as well of where people are coming from.” This open-mindedness revealed in the case studies, confirmed Schwab’s (1969) description of the stage where teachers generate alternative solutions as finding “not the right alternative, for there is no such thing, but the best one” (p. 20-21).
Another theme in this research examined how schools and teachers deal with collaboration conflicts. Brooks (1986-1987) warned, “Curriculum development and delivery from a constructivist perspective is a highly complex, idiosyncratic endeavor” (p.66). He added, “The success of constructivist approaches to curriculum development and delivery is contingent on the thoughtful mediation of the teacher” (p.66). One of the findings of this research was that once the structure of the curriculum is in place in terms of learning outcomes and standards, teachers would deal with the constructivist challenges of the curriculum with fewer collaboration conflicts. Teachers in the European school used reflection time, the intervention of experts, and the centrality of the students as guiding steps to resolve their differences. The IBPYP system adopted by the European school allowed the freedom of implementation, offered flexibility in the choice of transdisciplinary themes concepts, permitted experimentation with various implementation strategies and themes, and gave the teacher the choice of the learner outcomes they deemed appropriate for their students. Therefore, to the challenges discussed by Brooks above, this study found further, context-specific obstacles.

Teachers perceived the challenges of the constructivist curriculum differently in the two schools. A teacher in the European school stated, “[The PYP] is conceptually based and we all are heading towards the key concepts and the related concepts. We can do it certainly in different ways and that’s fine too.” And most teams expressed no worry about trying different ways to address the UOI. One team reported, “We have revamped existing units while we have changed and tweaked (others) because we didn’t feel it is informing our teaching.” The curriculum coordinator looked at the phase of planning in a deductive way. She implied that once the structure of the learner outcomes are in place, the rest should follow. In fact, one of the differences between the two case studies is the fact that the constructivist challenges in the European school stemmed mainly from designing the
curricular structure; negotiating expectations and relating content by grade level to the cognitive abilities and the developmental stages. The U.S. school, in contrast, had the content standards ready and their challenges were to distribute these standards in a thematic, integrated way that would meet the requirements of two systems; the IBPYP and the state.

Despite these differences, meeting student needs was a central concern for all teachers. All of the teachers expressed concerns about meeting students’ cognitive needs in their daily work, and they continually reflected on their practices, with students at the center of their focus. The U.S. magnet coordinator reported talking about really helping the students to understand their inquiries but at the same time “stay true to what we have to teach from the front of [referring to the State and Common Core State Standards].”

A dissertation study by Saa’d Aldin (2014) conveyed concerns about the confusion in implementing the Diploma Program (DP) collaboration and reflection standards in Amman, Jordan, which was partly due to the vague guidance of the standards and the lack of expertise of the teachers. Another research study conducted by Hallinger, Walker, David, and Lee (2011) on the transition between the MYP and the DP reported the concerns of 87.1 % of the MYP coordinators about the need to develop the published MYP vertical and horizontal articulation documents. The present study confirms the need for additional guidance from the IBO in the area of the PYP curriculum alignment. The findings showed some barriers to curriculum alignment due to the ambiguity of the guidelines where the instructional leaders use their own lens to interpret the IBPYP framework.

Alignment was perceived as a hit or miss process. Some teachers in the European school expressed concerns, along the lines of those represented in the study conducted by Cook (2015), about the change of the direction the curriculum takes with the level of expertise of the curriculum leader and the freedom the teachers had in changing content. “A lot of things tend to change because of personal likes,” said one team. The IBPYP standards
are visited occasionally and are not used in the practical function of aligning the curriculum vertically or horizontally. The teachers at the European school were split between adopting additional content standards for the areas of science, math, and social studies to add consistency and full coverage for the students. Some teachers considered the content and depth of knowledge in the PYP as “tricky and a bit of a grey area” and the curriculum coordinator explained that the documents of the IBO are a starting point and the schools that do not have national curriculum standards “have to choose one.”

The lack of content standards in the IBPYP renders the vertical alignment of the curriculum challenging. The U.S. school had concerns about aligning with the local standards to meet the clear content requirement set by the state, and their challenge was to align to those mandated requirements as well as with the PYP documentation and delivery form. The magnet coordinator reported the challenge of aligning the U.S. curriculum with both systems as she said, “It was confusing, because according to their [Canadian IB workshop leader] system, things were quite different from what we are required to do...it is tough, really tough.”

The theme that emerged with regard to teachers’ challenges in planning their POI included the financial and logistic demands of creating new UOI. However, the summative assessment and evaluation of their POI showed a large discrepancy between teachers at the European and with the U.S. schools. A research study conducted by Pollard, Triggs, Broadfoot, McNess, and Osborn (2000) suggested that summative assessment be carried out and used without having a high profile, which could affect the students negatively. Some of the European schoolteachers reported taking discrete actions by simply reporting the summative assessment in the report card but allowing the student to catch up in the next UOI. They believed that concepts are developmentally related to students’ cognitive abilities and that students make the connections when they are ready.
The IBPYP put high emphasis on formative assessment and considers it as a stage for reflection and remediation. This practice proved in many research studies to be effective at contradictory levels, the higher or lower achievers. Phelan, Choi, Vendlinski, Baker, and Herman (2011) considered the formative assessment as a series of tests to check for understanding. The findings of their study were contradictory with Black and William’s (1998a) results in relation to those who benefited the most from intervention. They reported that the improvement was greater for the higher achievers while Black and William found it higher for the lower achievers. Some teachers at the European school were treating summative assessment as a way to report results but also a chance to address misunderstanding. This discrepancy in the practices between teams reflected another area where schools could address alignment. In the U.S. school, the accountability was high and transparent and the pro-active measures of intervention were a priority on the school agenda. The level of attention given to assessment and remediation represent as well the culture of the school.

In a study on 21st century skills, practices, and programs, Oretta (2012) found that collaboration affects the level of success of a school and it has an impact on the culture of the school. Although this research study did not evaluate schools, it discussed collaboration as a means for planning and alignment. At the European school, the teams practiced the same strategies in designing their UOI and had very close pedagogical understandings. The IBO philosophy was explicit in practice and theory. Collaboration between teachers and with the curriculum coordinator had created a homogeneous way of approaching curriculum processes. A teacher expressed the importance of collaboration in her professional career saying, “Collaboration is an integral part of what I do and who I am as an educator” while another teacher explained, “When we work as a team, where people have the opportunity to give their ideas and to make suggestions, the whole that
comes out is going to be better than sum of the parts.”

Teachers in both schools expressed the importance of collaboration. In the European school the schoolteachers demonstrated that it has become a normal way of working at school. Some teams elaborated, “Even if we didn’t have [collaboration protocol] written down on paper that’s what we adhere to” and “We pull together and we get it done.” The principal summarized the culture of discussion and collaborative leadership by explaining that consistency in collaboration creates a culture. She said, “culture is set by the senior leadership team; a collaborative leadership team who are not dictating positions but opening a discussion forum that would filter through the troops.” In the U.S. school, a teacher concluded, “All staff, parents, students, and school community work together to make the Primary Year Programme successful and effective. As they say, ‘it takes a village!’” Working together, discussing, consulting, and collaboratively deciding in a school reflects the culture of the school.

Another study about curriculum integration in Singapore by Lam et al. (2013) revealed some results similar to what the teachers experienced in this research as challenges of integrated curriculum design and alignment. Some of these challenges were: lack of knowledge, lack of time and willingness, and the implicit guidance teachers received.

Overall the two schools adopted the same PYP framework but their cultures differed because of the context in which they operated. This included, among other elements, the level of accountability in terms of student achievement and the level of fidelity to the pedagogy and practices of the IBPYP in relation to defined or flexible content standards. Consequently, the curriculum alignment in the European school requires an internal alignment focus on what the school decided to teach vs. an external focus on how to use to external content standards to align planning and student achievement.
New Discoveries

This study revealed teachers’ awareness of and willingness to accept responsibility for curriculum alignment. Most teachers in both schools took this responsibility on their own shoulders, with the guidance of an expert, in the form of the curriculum coordinator and the principal. Only one teacher in the U.S. school said that the responsibility for curriculum alignment lies with the state. This teacher defined curriculum as the “content that the State deems as important to teach the children,” which effectively assigned the responsibility for curriculum alignment to the state.

The teachers in the IBPYP may have understood curriculum alignment based on the way they do it in their context or school. The European schoolteachers were challenged to choose themes or concepts from the multiple options of the transdisciplinary themes and they had to decide on the learner outcomes, the content, assessment, and all other aspects of designing coherent scope and sequence documents. This framed their opinion based on what they did collaboratively. The context of the U.S. school was different and teacher understanding of alignment was not framed in deciding about content and learner outcomes. Rather, teachers in the U.S. school understood alignment as the structure and implementation of lesson plans and student performance in line with the requirements of the state and Common Core State Standards, and the demands of fitting that content into the form and pedagogy of the IBO.

Another finding was the debate surrounding the role the teachers play in curriculum design and alignment. Some teachers were confident they were designers and implementers of the IBPYP curriculum while the principal and curriculum coordinator were certain that teachers were planning units, not the curriculum. A veteran teacher confirmed, “I would say that in the PYP schools there is that expectation that you are able to design the curriculum.” The curriculum coordinator justified her opinion by referring to the IBO guidance. She said
that the IBO has released a model curriculum that did not exist before because “they realized that teachers are not curriculum designers…they are implementers.” The curriculum coordinator and principal believed that the IBO is providing the framework and the school was providing the guidelines and the teachers are just filling the requirements of the learner outcomes by designing inquiry-based integrated lessons. This study concluded that the history of the school and teachers’ experiences could have impacted this disagreement. There is a difference between handing a scope and sequence document and ready-made UOI to the teachers to compare, contrast, and decide what school learner outcomes they judge suitable, and asking them to design their own benchmarks for assessments, to structure and resource completely new UOI, to compare other standards with their scope and sequence, to draw sequenced contents from grade to grade, and to revise subject content with middle and high school. The discrepancy between the views of the teachers and those of the instruction leaders may be linked to the assumption by leadership that once the system is in place, and the teachers can use it without considering how it was developed. This debate was not investigated in the U.S. school due to their withdrawal from the research.

One of the findings was related to the fact that subject integration was a bigger problem for the U.S. school, which had a larger number of teachers and had limited resources, including specialists. It proved difficult for a specialist to plan for too many classes. The magnet coordinator and a senior administrator for the IBO program in the county explained that some areas are easier to integrate, like the language arts program, while others, like physical education, art, and music, are more challenging.

Another finding from the U.S. school regards the lack of professional development and collaboration with other schools in the county. The teachers were confused by the IBPYP terminology and the coordinator was still considering her next steps in the process of curriculum alignment. A senior administrator for the IBO program in the county referred to
the lack of time, resources, and training as elements that prevented the teachers from seeing that, for example, the Common Core State Standards and the state standards mesh with the IBPYP. In addition, the schools were not allowed at the time of the research to share planners and the U.S. school’s online documentation system was at an early stage of development. Consequently, the differences between IBPYP schools in their experience with curriculum alignment is not only systemic but is also related to the maturity of the program implementation within the schools.

An additional finding was related to the practice of assessment, which is one of the three pillars of a curriculum (English, 1992). The two schools differed in assessing either content or concepts. The European school focused on assessing concepts that were aligned with the central idea and the lines of inquiry while the U.S. school felt obliged to address content, as prescribed by the state and county’s assessments. Although the magnet coordinator mentioned the alignment of assessment with the central idea of the UOI, she reported that the school relied too much on official testing because “there is so much pressure with testing and not from the administration but from where we are.” This study concluded that the two schools had differences in their application of the requirements of the IBO and the way they faced the challenges of curriculum alignment. The IBO recognized the contextual impact on the implementation of their programs. In fact, they expected the schools to meet the IBO standards and practices “to varying degrees along the way” (IBO, 2011, p. 1).

The final finding from this research study revealed some similarities between the strategies used in both schools to align their curriculum, and the methods of some research studies that were commissioned by the IBO. Conley and Ward (2009) used convergent consensus methodology in aligning the IBDP standards to college requirements. The method consisted of comparing the requirements of colleges with the existing IBDP standards.
Experts who made changes at each review stage conducted review sessions of the documents to progress toward consensus agreement on a final document. The purpose was to develop a set of standards that represented the knowledge and skills taught in the IBDP. The steps applied were coherent with what the teachers did.

The experts in the IBDP study (the grade level teachers/vertical subject committees/team leaders in this study) used the IB framework (the scope and sequence, and IBPYP published documents) to design initial draft standards (POI/ Learners Outcomes/content). The initial draft was then reviewed, edited, and revised in multiple phases by additional experienced IB teachers (all the grade level teachers). They followed agreed upon decision rules to conclude the process (this was done informally at schools). When experts agreed and no changes were required, the standards were reviewed and authorized by the IBO (curriculum coordinator/the principal).

Faas and Friesenhahn, (2014) analyzed the alignment between the IBDP and the German and Swiss curricula using a similar approach when comparing philosophical underpinnings, cognitive demands, and content. This finding reflected the possibility of creating an alignment framework that could be used by schools instead of letting them reinvent the wheel separately.

**Contribution to Practice and Recommendations**

The majority of participants in this study were practicing teachers who were involved in teamwork to design and align the PYP curriculum in two different contexts where the IBPYP standards were applied and also in a setting where the state and Common Core State Standards were compulsory. The teachers shared practical information, notably their strategies and processes in addressing curriculum alignment, which could answer and guide other teachers’ inquiry about alignment. The teachers participated in the hit or miss practices and generously gave their time and expertise to the benefits of their students and schools.
This research recognized their creativity and productivity as they managed to reach a methodology similar to the experts in the area of alignment. This study opens the door to teachers to acquire information not only about strategies but also about the existence of many beneficial tools like Managebac software, the OCC, and the curriculum model created by the IBO. The IBO made all forms of documentation and research accessible online to their schools. This study recommends the teachers to take the time to investigate those resources, notably when they lack financial support to attend IBPYP workshops.

The administrators shared their vision and perceptions about curriculum, which showed some discrepancies with what their teachers thought. This study was a forum for multi-level discussions that revealed alignment in teachers’ philosophy and practices in the majority of the curriculum areas between grade level teams of the European school and the IBO. These findings could open a window for making informed decisions and improvements to the implementation of the program. The teachers worried that they were not teaching all areas in science, for example. This study would suggest adding consecutive stand-alone short units across the grades to compensate for the gap.

Attention to the importance of assessment policies and the need for certain stability in the areas of curriculum were conveyed through the teachers’ concerns that the curriculum changes with the level of expertise and the people in charge. IB schools may benefit from shared practices but also learn about the expectations in other cultures. It is recommended that schools adopt a systemic approach where processes of curriculum design and alignment are documented and institutionalized.

Students and parents gained insight into the IBPYP system, especially those who attended the European school and who came from standards-based high accountability school cultures. This study explored within limitations the differences in the implementation of the PYP in two contexts that could be relevant to a large number of international students.
The IBO addressed alignment at the DP level and compared the PYP with Common Core State Standards. This study focused on the alignment at the PYP level in two different contexts of standards requirements, which is a gap in the IB research studies. The findings of this research gave the teachers and administrators a voice to express their needs for clearer guidance on how to create articulated aligned curricula. Walker (2003) in his definition of curriculum stressed the importance of “ordering content and purposes for teaching and learning” (p.5). English (1992) posited that alignment could be between different elements and is subjective to the practitioners’ perceptions. Conley and Ward (2009) explained the IBO position on standards,

Historically, the IB Programme has employed a standardized curriculum delivered to all students regardless of country of origin, but that curriculum was not specifically tied to or derived from an explicit set of educational standards. The IB relies on its course documents, with their detailed specification of course aims and goals, along with its end-of-course assessment system to create a high degree of internal consistency. For this reason, explicit standard statements have not been necessary (p.8).

In this era of increased accountability, the IBPYP schools are exposed to the challenge of ordering content, concepts, skills, and goals. In addition, they have the freedom and the responsibility to decide what is aligned and how. The IBO did not intend to create content standards for the PYP and MYP and required them to align their curricula. This research recommends the IBO to create a practical table that suggests to the school what is supposed to be aligned, and the criteria against which the alignment is evaluated. Conley and Ward (2009) used criterion-based judgment process to determine the standards and their alignment with college readiness using content as one element in the process. Since the PYP does not prescribe content, it is suggested that the IBO consider two
steps: first, the development of the suggested concepts and their related content by discipline across the grades to show how alignment could be done in a system where content could change from school to school and where concepts drive the inquiry. The aim is to show how concepts could build and the depth levels at each range of the developmental groups.

Second, the creation of practical tools like tables and charts to make the use of this aligned conceptual framework handy for teachers.

In this age of technology and accountability, this research study recommends the IBO change the documentation of the “Planners” from a simple Word document to a software that would guide the schools to follow the structure of the intended planners and to give them the tools to compare, contrast and align their documents with clear criteria for alignment as defined by the IBO.

Proposals

In order to propose practical alignment tools for teachers, this research looked into the requirements of the IBPYP Curriculum Standards and Practices and pulled out the parts that were mentioned with alignment (Appendix G) in order to create a tentative checklist for the schools. The following areas of the philosophy, collaborative planning and reflection, the written curriculum, teaching and learning, and assessment were considered while searching the areas that required alignment in the program. By looking at Standard A, C1, C2, C3, and C4 the requirements were identified as:

- addressing the five essential elements of the program (Knowledge, concepts, skills, attitudes, and actions);
- integrating subject specific scope and sequence and the Program Of Inquiry (POI);
- creating balance and articulation between the transdisciplinary POI and the stand alone subject teaching;
• agreeing on expectations of student learning across the grades;
• assessment guides planning;
• building on students’ previous learning;
• identifying knowledge concepts, skills, and attitudes over time;
• indicating the development of conceptual understanding, knowledge, and
  skills for each PYP subject area in the scope and sequence documents;
• integrating the policies developed by the school in the written curriculum;
• aligning the reporting system with the assessment philosophy of the program;
  and
• the expectations of student achievements with the PYP documented
  expectations.

The philosophy required understanding of the program where the school community
uses the following: The PYP values to make decision; collaboration to develop the
curriculum; constructivist inquiry-based teaching and learning to develop critical thinking;
the PYP framework for planning, teaching and learning; and transdisciplinary learning.

The complexity of curriculum alignment, the increasing demands of accountability,
the expansion of the IB program in the world, and the available technological advances
inspired the researcher into founding a system that could facilitate the alignment and analysis
of the three dimensions of the IBPYP curriculum: The Written Curriculum, The Taught
Curriculum, and The Assessed Curriculum. The proposal is to create a curriculum mapping
software that builds on the tools offered in Managebac. It covers the different disciplines at
all the grade levels that feed into the planners of the transdisciplinary themes that were
designed by Managebac. It consists of the three dimensions of the curriculum mentioned
above with the possibility of branching each dimension into different components and each
component into various levels.
Dimension 1 (The Written Curriculum) is represented as the “Outcomes,” which include the five essential elements of the PYP (the skills, knowledge, concepts, action, and attitude) and each of those components covers the outcomes at all developmental levels. Dimension 2 (The Taught Curriculum) is represented by “Knowledge,” which is divided into two parts: the different levels of depth of the content by developmental level and the methodology used in teaching, which is based on Bloom’s (1990) Taxonomy which includes remembering, understanding, applying, analyzing, evaluating, and creating. This would show the different thinking levels and the differentiation in teaching. The third dimension (The Assessed Curriculum) is referred to as “Assessments.” It has multiple levels related to the above-mentioned Bloom’s Taxonomy. When the three dimensions are filled, the system would generate a report on what outcomes were taught, assessed, and at what developmental level. It would suggest a starting point for the next grade level.

The alignment would be multi-dimensional, would cover the differentiated aspects of the curriculum, and would allow by a simple choice of algorithm to analyze the different aspects of the program. This model would improve the productivity by providing speed, accuracy, and depth of analysis at the fingertips of the users. Teachers discussed reinventing the wheel at each school and the time spent outside the classroom for curriculum alignment meetings.

This model would allow flexibility in the choice of outcomes and content. It would provide an easier solution to the follow up on what each grade level is doing and how the POI is aligned. The user would see the progression of the pre-defined outcomes, knowledge, and skills and verify the teaching and assessment levels. These multiple pre-set expectations would increase the accountability and trust in the full coverage of the program. This model is graphically represented in Appendix H.
Limitations

This research encountered various limitations. The major limitation was the withdrawal of the U.S. school from the research, reducing the data collection to on-site observations, published documents, and interviews with the magnet coordinator and a senior administrator for the IBO program in the county. This limited the scope and authenticity of the findings because the study design anticipated working with teachers who applied the same PYP system in two different contexts.

The variation in the level of experiences in the PYP between the two schools reflected different realities and perceptions. Although we could argue that this difference opened a wider view on what is happening in some PYP schools, the researcher had wished to study comparative schools.

The findings could not be generalized and they were context bound because of the small number of participating schools. Although 22 teachers participated in the interviews at the European school, only 15 surveys were validated and another 15 for the U.S. school. This limited the process of triangulation of data that checked the authenticity and homogeneity of the collected information.

The researcher opened the participation to all classroom teachers but could not change the fact that all of them were either Europeans or Americans. The teachers in the U.S. school were mostly Americans without indication of race or ethnicity. This resulted in the analysis of the research problem from the lens of the dominant culture, which reduced its representation of the PYP schools worldwide.

The thick descriptions of the contexts might help future research to associate the setting with the findings, which could assist in the replicability of this research and the association with the experiences shared in this study.
Suggestions for Future Research

This research intended to open the discussion about teachers’ experiences with curriculum alignment in both contexts of independent schools that follow the IBPYP standards and national schools that have another layer of national standards to satisfy. Due to the limitations above, this research could not cover the American system fully. Therefore, this study recommends further research in the area of alignment challenges and strategies in American or other national schools at the PYP level.

The debate observed in this research around teachers’ perceptions of themselves as designers and implementers of the PYP curriculum is an area that has not been widely addressed. Other research studies in PYP schools are needed to explore the commonality of these assumptions amongst teachers and how this changes the perception of teachers’ role and teachers’ education.

The wide gap in practices in terms of technology between the two schools in this research opens the door to questions about the efficiency of curriculum mapping software and how it contributes to curriculum alignment. Investigations into PYP schools using paper planners or Word document planners and those using Managebac or any other compatible software with the PYP are recommended.

This research identified the mandate for the PYP independent schools to use external content standards in the subject areas of science and social studies. Further investigations in similar schools would inform new candidate schools and the IBO on some challenges that could be expected and addressed.

Conclusions

This research is an exploratory multi-case studies conducted in two IBPYP schools; one international independent private school in Europe, and an American publically funded magnet school. Teachers and administrators at these schools reflected and shared their
experiences in the areas of collaboration and alignment strategies at the PYP level. Guided by the interpretive constructionist paradigm, the themes emerged inductively to reflect the multiple facets of the truth as context bounded realities. The findings offered information that could be validated by other research studies but represented a genuine illustration of the professional lived experiences at the two schools.

The choice of the two school contexts informed the research about the variations in the implementation of the IBPYP framework and their impact on curriculum alignment perceptions and strategies. The findings showed that the alignment strategies were developed by the schools and to a certain extent, alignment was perceived as a challenge in the absence of concrete criteria and training.

The IBO is expanding in countries where the two contexts considered in this study are applied. They have commissioned studies to facilitate the alignment of the Diploma Program with local national curricula standards, but little has been done at the PYP level. In this era of increasing accountability and reliance on technology, the IBO may have to consider clarifying their expectations, offering strategic guidance in the area of curriculum alignment, and updating the technology used in linking planners and disciplines to facilitate the development of integrated curricula that could be compared and contrasted to allow alignment.
References


Code.org (2014). *What’s wrong with this picture? Computer Science: America’s untapped


Retrieved from


https://ibdocs.ibo.org/research/search.php?att=title&term=A%20study%20of%20the%20perceptions%20of%20International%20Baccalaureate%20Primary%20Years%20Programme%20teachers%20on%20factors%20influencing%20their%20development%20as%20PYP%20educators.&type=Thesis%20/%20Dissertation


Hargreaves, A. (1994). *Changing teachers, changing times: Teachers’ work and culture in*


from http://www.ibo.org/pyp/assessed/index.cfm


Australia, and Hong Kong. Bethesda, MD, USA: International Baccalaureate Organization.


### Appendix A:

**Terminology**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td><strong>Career Related Program (CP)</strong></td>
<td>The International Baccalaureate Career-related Certificate (IBCP) combines the academic and challenge of IB with specific career training and skills for students aged 16-19.</td>
</tr>
<tr>
<td><strong>Common Core State Standards</strong></td>
<td>In the U.S., the Common Core State Standards are a clear set of shared goals and expectations for the knowledge and skills students need in English language arts and mathematics at each grade level.</td>
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<tr>
<td><strong>Constructivist inquiry</strong></td>
<td>Learning from observation, experience, and reflection to construct meaning and knowledge of the world.</td>
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<tr>
<td><strong>Diploma Program (DP)</strong></td>
<td>The International Baccalaureate Diploma Programme (IBDP) is a two-year educational programme primarily aimed at students aged 16–19.</td>
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<tr>
<td><strong>Holistic curriculum</strong></td>
<td>Holistic education is a philosophy of education that considers the individual in connection with the environment he lives in. It captures the values, purpose, and meaning that form each person’s identity.</td>
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<tr>
<td><strong>Independent schools</strong></td>
<td>The schools that are not mandated to follow the local/national curriculum standards.</td>
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<tr>
<td><strong>Integrated / transdisciplinary</strong></td>
<td>The barriers between subject matters are dissolved to integrate different subject areas within the Units of Inquiry in the IBPYP.</td>
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<tr>
<td><strong>Middle Years Program (MYP)</strong></td>
<td>The International Baccalaureate Middle Years Programme (IBMYP) is an educational program affiliated with the</td>
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<tr>
<td>Term</td>
<td>Description</td>
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<tr>
<td>International Baccalaureate programme</td>
<td>Intended for students aged approximately 11 to 16.</td>
</tr>
<tr>
<td>Primary Years Program (PYP)</td>
<td>The International Baccalaureate Primary Years Programme (IBPYP) is an educational programme managed by the International Baccalaureate (IB) for students aged 3 to 12.</td>
</tr>
<tr>
<td>Program Of Inquiry (POI)</td>
<td>The collection of all the Units Of Inquiry that cover the curriculum of the elementary school.</td>
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<tr>
<td>Scope and Sequence</td>
<td>A Scope and Sequence document outlines for each grading cycle or subject area the learner outcomes, the content and skills, and the suggested order.</td>
</tr>
<tr>
<td>Unit of Inquiry</td>
<td>A series of lesson plans that integrate different subjects to explore a conceptual framework that is structured under a central idea and lines of inquiry.</td>
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<td>Vertical alignment</td>
<td>The sequence in content, concepts, or skills from grade to grade.</td>
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</table>
Appendix B:
Call for Voluntary Participants

My name is Lilly Khairallah and I am a PYP teacher following doctoral studies at Northeastern University in Massachusetts, United States. I am specializing in Curriculum, Teaching and Learning, and Leadership. I am currently planning a doctoral research study to conduct in two IB PYP schools, one in Europe where the IB standards are used and in the USA where another layer of State standards is added. The research will cover the area of curriculum design and alignment in schools that apply inquiry based teaching and high level of teacher collaboration to design and implement a comprehensive transdisciplinary IB PYP curriculum. I am writing to invite you to participate in this research study that focuses on answering the following main question: How do IB PYP teachers in a naturalistic collaborative approach experience the vertical alignment of their Program of Inquiry?

We know that the IB PYP teachers plan collaboratively using the transdisciplinary themes, the student profile, the IB attitudes, the developmental skills, and the standards to plan their Program of Inquiry. However, in some cases the tension and uncertainty arose when teachers add curriculum alignment in an inquiry based curriculum design. Little research discussed IB PYP teachers’ understanding of alignment and the processes they use to create sequence in content and skills to prepare the students from grade to grade. Therefore, this research will focus on teachers’ practices and the alignment tools available to them to suggest ways to improve the system.

By participating in this study you will help understanding how teachers plan collaboratively and the stages and processes they go through in designing a balanced Program of Inquiry. The teachers will benefit from sharing a repertoire of alignment strategies that could be used at the practical level of curriculum design.

Practicalities
If you have taught at least two years at your IB PYP school and you are 20 or older and you choose to participate in this research study, you will be required to fill a 15 min survey and take part of two sets of interviews lasting 45 minutes each. The interviews will be scheduled to your convenience and there is no preparation required. A variety of interview options will be available – By phone, Skype, or face-to face.

Confidentiality
In line with standard procedures for academic research, your interview will be entirely confidential – including your grade level and the name of your school. Research output will be based on aggregated data and where quotes are used, all personally identifying information will be disguised. As a research participant you have the right to withdraw at any time of the process and to refuse answering questions that you redeem uncomfortable. All participants will have access to the published research.

Next steps
I hope that you would consider participating in this study. Please contact me directly by email (Khairallah.l@husky.neu.edu) if you are interested in joining.

Best regards,
Lilly Khairallah (EdD student at Northeastern University- Institutional Review Board (IRB) for research ethics approval # xxxxxx).
Appendix C: UNSIGNED CONSENT DOCUMENT

Northeastern University, College of Professional Studies Department of Education
Name of Investigator(s): Dr. Kristal Clemons (Principal Investigator), Lilly Khairallah (Student Researcher)

Title of Project: The Integration of Vertical Alignment of Content and Skills in Teacher Collaborative Planning in the International Baccalaureate Primary Years Program

Request to Participate in Research
We would like to invite you to take part in a research project. The purpose of this research is to explore how teachers structure a curriculum to harness vertical alignment based on their understanding and the guidance they receive. The study seeks understanding of the challenges, decision-making, and alignment mechanisms the teachers use during their collaborative curriculum design meetings. The aim of this research is two fold: 1) To explore how IBYP teachers address curriculum alignment during their collaborative planning and 2) outline the strategies used by different IBYP schools to balance their curriculum.

You must be at least 20 years old and must have taught at least two years at an IBYP school in order to participate. The study will take place at a location of the participants' choosing and will require 2 interviews of 45 minutes. If you decide to take part in this study, we will ask you to fill out a 15 min survey and to answer collaboratively with your grade level team two series of questions related to your experience in planning and teaching in the IBYP system.

There are no foreseeable risks or discomforts to you for taking part in this study. Your part in this study will be handled in a confidential manner. Only the researchers will know that you participated in this study. Any reports or publications based on this research will use only group data and will not identify you or any individual as being part of this project. The decision to participate in this research project is up to you. You do not have to participate and you can refuse to answer any question. Even if you begin the study, you may withdraw at any time. You will not be paid for your participation in this study. Although there are no direct benefits to you, your answers may help us to learn more about how teachers plan collaboratively and the stages and processes they go through in designing a balanced Program of Inquiry.

If you have any questions about this study, please feel free to email me, the student researcher, at Khairallah.L@husky.neu.edu. You can also contact Dr. Kristal Clemons, the Principal Investigator, at k.clemons@neu.edu.

If you have any questions about your rights in this research, you may contact Nan C. Regina, Director, Human Subject Research Protection, 960 Renaissance Park, Northeastern University, Boston, MA 02115. Tel: 617.373.4588, Email: n.regina@neu.edu. You may call anonymously if you wish.

You may keep this form for yourself. Thank you.
Lilly Khairallah

Approved
Appendix D:

Interview Protocol

Interview Protocol

Institution: Northeastern University; 360 Huntington Avenue; Boston, Massachusetts 02115

Interviewee:

Interviewer: Lilly Khairallah

Date:

Location of Interview:

************************

Face-to –Face Meeting

Thank you for expressing interest in this study. My name is Lilly Khairallah, and I am a doctoral student at Northeastern University. This research is being conducted as my doctoral thesis project. The goal of the study is to understand how teachers consider vertical alignment during their collaborative planning sessions. Vertical alignment is the process that assures that the content or knowledge we teach and the skills we aim for developing are constructed in an organized way where one grade builds on the ones before it and after it. This study will explore the strategies the International Baccalaureate Primary Years Program (IBPYP) teachers and their administration use to align their inquiry-based curriculum.

I am interested in this research for a few reasons: first, I want to know how teachers collaborate to determine the level of depth of content in their Units of Inquiry. Secondly, I wonder how curricula are built to develop the skills taught from grade to grade. The third reason I’ve chosen this topic is to investigate the processes and the challenges of alignment when the schools use the IBPYP standards alone and when national authorities or States add another layer of content standards.

As the student researcher, I am the person who will be conducting the interviews. I would like to thank you again and remind you that you have signed the consent to participate in this research. However, I would like to insist that you have no obligation towards this research. You have the freedom to drop out or refuse to answer any question. Your answers and identity will remain confidential and I will be using pseudonyms when I quote any of you. I want to clarify that you have agreed to have this interview recorded, which will facilitate the transcription and improve the validity of the findings.

This is a two-45 minutes interview process that I hope to be able to achieve within a month. In the first interview, I will collect information about three areas: teacher collaboration, the Program Of Inquiry, the vertical alignment of the curriculum, and the processes and tools available to do that. In the second interview I will ask for clarifications and build on the answers I get from the first interview.

Do you have any question so far?
Interview #1

Part 1: Introductory Protocol

Thank you for participating in this study. This research project focuses on the experiences teachers have to understand how teacher collaboration could be used to design and align a curriculum. The unit of study is the IBPYP system not the individuals so the aim is not to evaluate individuals or teams and to focus on the aggregate data that would help us to understand how the IBPYP curriculum alignment works when a school is subject only to the IBPYP standards and when it has an additional layer of standards, like state or national standards.

Your responses are important and I want to capture everything you say. I would like to audio tape our conversation today but I will be also taking notes. I will be the only one other than the transcriber who would have access to this audio. The audio file will be deleted after the transcription. I commit again to preserving the confidentiality of the data and remind you that I will use pseudonyms when I cite one of you.

I would like to begin recording this session now. Are you ready? Ok, the audio recording has begun.

You all have signed the consent statement for this study. You are being asked to participate in two interview sessions about vertical curricular alignment in IBPYP schools. There are no foreseeable risks or discomforts to you for taking part in this study, and there are also no direct benefits to you for participating in the study. The decision to participate in this research project is up to you. You do not have to participate and you can refuse to answer any question.

Do you have any additional questions or concerns about the interview process or the consent form? Do you give your verbal consent? Thank you.

This is the first interview and it will last 45 minutes. Today, I have a series of questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you in order to complete this line of questioning. Do you have any questions at this time?

Part 2: Interview Introduction

I am conducting a qualitative case study to understand the experiences of teachers in the planning and alignment of the Program Of Inquiry. The approach to this qualitative study will be a series of questions designed to gain insight into your perceptions and practices to possibly identify some alignment processes that could be helpful to the IBPYP teachers.

Are you ready to begin?

Part 3: Questioning

I’d like to start by asking you some questions in regards to your experience with curriculum alignment as a stage in collaborative planning. We will cover four domains: the challenges
of designing the PI, collaboration stages, curriculum alignment, and the processes and tools available to curriculum alignment and collaborative planning. This should take about 45 minutes.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Subtopic</th>
<th>Q</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Of Inquiry</td>
<td>Practices</td>
<td>Q1</td>
<td>Let’s assume you are meeting to decide on a new Unit of Inquiry. Could you describe how you would do that? (Steps, considerations, Decision factors, objectives, involvement)</td>
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<tr>
<td></td>
<td></td>
<td>Q2</td>
<td>How do you sort your differences in opinion and beliefs?</td>
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<td>Q3</td>
<td>When and how do you decide on the depth and breadth of knowledge in your inquiry plan at grade level and across grade? (Documents, processes that help)</td>
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<td>Q4</td>
<td>How does this apply to the decision about the skills to teach?</td>
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<td></td>
<td>Q5</td>
<td>Parents, students, and the administration have expectations in education. How do you choose your expectations from students/ or the outcomes?</td>
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<td>Q6</td>
<td>How are content and skills documented/ Evaluated?</td>
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<td>Q7</td>
<td>If the teachers, principal, or the curriculum coordinator check student results from embedded tests, how are the results used to provide input to curriculum design or update?</td>
</tr>
<tr>
<td>Evaluation</td>
<td></td>
<td>Q1</td>
<td>How do you reconcile between the IB and the State standards in your planning?</td>
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<td></td>
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<td>Q2</td>
<td>Have you developed any formula or process that makes the task easier for the teachers?</td>
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<td>Q3</td>
<td>How do you evaluate the structure/balance of your Program Of Inquiry? Can you share any pre-determined criteria/tools the school uses?</td>
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<td></td>
<td></td>
<td>Q4</td>
<td>What challenges do you face when you consider the alignment of your PI?</td>
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<tr>
<td>Collaboration</td>
<td>Assumptions</td>
<td>Q1</td>
<td>Some people think that collaboration is a culture in a school while others believe that it should be a contrived step in planning, what do you think?</td>
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<tr>
<td>Practices</td>
<td>Q2</td>
<td>What conditions/skills do you think are necessary for collaborative planning to be efficient?</td>
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<tr>
<td>Q1</td>
<td></td>
<td>How many horizontal and vertical collaboration sessions do you have per week/year? (Integration in the schedule, sufficiency)</td>
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<td>Q2</td>
<td></td>
<td>- Have any of you received training in collaboration strategies?</td>
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<td></td>
<td></td>
<td>- How do you structure your meetings?</td>
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<td></td>
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<td>- How do you judge the efficiency of your collaborative meetings?</td>
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<td></td>
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<td>- Do you follow a collaboration protocol or follow accountability checks?</td>
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<tr>
<td>Q3</td>
<td></td>
<td>When and how do you address alignment during your collaboration meetings?</td>
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<td>Q4</td>
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<td>- Students at the same age may have different developmental levels. How do you differentiate in instruction? And assessment?</td>
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<td>- Is this differentiation pre-planned collaboratively and documented in the written curriculum?</td>
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<td></td>
<td>- Does it impact the level of content or the number of skills taught?</td>
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<td>Q5</td>
<td></td>
<td>- Is assessment a part of teacher collaboration practices?</td>
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<td></td>
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<td>- How does it work?</td>
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<td></td>
<td>- Do you follow the same assessment tasks/questions between classes?</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Does the level of difficulty or the form of questions change with the grade levels?</td>
<td></td>
</tr>
<tr>
<td>Curriculum Alignment</td>
<td>Q1</td>
<td>- Have any of you received any training in curriculum design or alignment?</td>
<td></td>
</tr>
<tr>
<td>Practices</td>
<td></td>
<td>- What pre-requisite skills do you think teachers should have to be able to align a curriculum?</td>
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<tr>
<td></td>
<td></td>
<td>- What potential barriers do you think the teachers face in their alignment activity?</td>
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</tr>
<tr>
<td>Question (Q)</td>
<td>Details</td>
<td></td>
<td></td>
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<td>--------------</td>
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<td></td>
</tr>
</tbody>
</table>
| **Q2**      | - Who monitors curriculum alignment at your school?  
- How are the corrective measures designed?  
- What attributes does an aligned curriculum have? |
| **Q3**      | - How do you define the relationship between the written, taught, and tested curricula?  
- How is assessment linked to curriculum design and alignment? (Frontloading, backloading)  
- In what way does it impact the adjustments in the program?  
- What do you think your individual contribution to curriculum alignment is? |
| **Q4**      | - When was your last IBPYP self study process for re-authorization?  
- How did you prepare for it?  
- What were the main IBPYP recommendations?  
- Did the teachers take part in the design of the action plan to address the recommendations? How?  
- How did you address the alignment section in Standards C of the self-study? |

**Processes**

<table>
<thead>
<tr>
<th>Question (Q)</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Q1</strong></td>
<td>What are the processes and the challenges of alignment when the schools use the IBPYP standards alone and when national authorities or States add another layer of content standards?</td>
</tr>
<tr>
<td><strong>Q2</strong></td>
<td>What alignment strategies does your school use?</td>
</tr>
<tr>
<td><strong>Q3</strong></td>
<td>What processes/steps are put in place to help you in planning/reflecting/reviewing the curriculum?</td>
</tr>
</tbody>
</table>
| **Q4**      | - How are the IBPYP framework/standards and practices helping or hindering you in aligning your curriculum?  
- Do the state standards help? How? |
Part 4: Wrap-up

That concludes the questions for today’s interview. Before we wrap up, do you have any questions I could add to this interview?

I want to confirm the time for the next/final interview: ___

Thank you so much for your participation, and I will call you for the final interview on __.

******************************************************************************

Interview # 2

Reflection, Assumptions, and Expectations

Part 1: Introductory Protocol

Today’s interview will allow us to follow up on questions from the first interview. I will be asking clarifying questions to elaborate on some points you mentioned and I felt that you could help me to better understand what you meant. Similar to last time, I will be audio recording this interview. Are you ready to begin?

Part 2: Questioning

1) Based on our last discussion, I would like to know if you have had further thoughts on any of the topics we discussed.
2) Do you think teachers should work on vertical alignment or is it the job of experts?
3) Does the fact of collaborative planning in the IBPYP justify giving the alignment tasks to teachers/schools?
4) What kind of curriculum alignment is the most important? Why?
5) Do you believe that content should be vertically aligned? And in what way?
6) Do you believe that skills should be vertically aligned? And in what way?
7) What do you hope to learn about curriculum alignment?
Part 3: Wrap-up

Thank you, that concludes the interview questions for this final interview.

If I need to ask any follow-up questions for clarification, would you mind if I contact you again? Would you prefer I contact you via email or telephone?

Sometime over the next month, I will email you word-for-word transcripts and my initial interpretations of both interviews. If you chose, you can review the information, and you will have one week to provide me with any feedback, alterations, or corrections. Can you please confirm the email address you would like for me to email the transcripts to?

And once this thesis study is complete, which will most likely be 3-6 months from now; would you like to receive an electronic copy of the document?

Do you have any questions for me?

Thank you so much for your participation in this study!
Appendix E:

Survey Questions

Thank you for taking the time to contribute to this research study. Feel free to write as much as you need, but please answer all of the questions. If you cannot answer the question, fill in "N/A."

1. What grade(s) level do you teach?
   a. Currently
   b. In the past

2. What qualification(s) do you have?
   a. In teaching
   b. Other

3. How many years of teaching experience do you have?
   a. In general
   b. In the PYP

4. What IBPYP training did you take?

5. What responsibility other than teaching do you hold?
   a. Currently
   b. In the past

6. What is your understanding of “Collaboration in the PYP”?

7. How does teacher collaboration impact your planning and teaching?

8. How would you define curriculum?

9. Curriculum alignment:
   a. How do you define curriculum alignment?
   b. Who is responsible for curriculum alignment?
### Appendix F:

**Research Findings**

#### Table 6

**Summary of the Findings**

<table>
<thead>
<tr>
<th>Findings</th>
<th>European School</th>
<th>U.S. School</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Collaboration</strong></td>
<td>- Working together, a culture, a source of reassurance of good practice</td>
<td>- Working together for a culture, a source of reassurance of good practice</td>
</tr>
<tr>
<td><strong>Pre-requisite conditions</strong></td>
<td>- Requires readiness to listen and discuss in a respectful and safe environment, modeling and structure, staying on track, knowing the curriculum, have a common goal and similar pedagogical approach, continuity and professional development, scheduling, time and resources, leadership, and pre-approved protocol.</td>
<td>- Results in ownership of the curriculum, becoming a culture,</td>
</tr>
<tr>
<td><strong>Dealing with conflicts</strong></td>
<td>- 4 strategies facilitated by the IBPYP framework or experience: Flexibility in the design and implementation, the involvement of experts, allowing time for reflection, and giving the children the priority.</td>
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</tr>
<tr>
<td><strong>Assumptions about curriculum and alignment</strong></td>
<td>- Curriculum is a framework of what is taught, learned, and assessed. It is the totality of students’ leaning experiences. - Curriculum alignment is a constructivist progression to scaffold knowledge and concepts. - Everyone is responsible for curriculum alignment with the supervision of the curriculum coordinator.</td>
<td>- Curriculum is a framework that shapes education, it is a guide for State mandated content, and a balanced approach that encompass the whole child. - Curriculum alignment is a build on of content and concepts to scaffold instruction. It is an alignment with the State standards - Teachers are responsible of</td>
</tr>
</tbody>
</table>
### Barriers to curriculum alignment

- Debate whether teachers are curriculum designers or implementers.
- It could be a hit or miss because of the various levels of expertise, lack of time and resources, and the need for content standards.
- Vertical alignment is a challenge in science and social studies.
- The challenge of tackling vertical and horizontal alignment at the same time.
- Faculty turnover
- Avoid attachment and encourage faculty buy-in.

Curriculum alignment with the guidance of the administration. It is the State’s responsibility but the teachers are accountable.
- The barriers were sorting priorities and the need for free collaboration time.
- The lack of training and resources.
- The different perceptions of the PYP framework.
- The electronic documentation system.
- The absence of collaboration between schools.

### Teachers’ challenges in planning their POI

#### The challenges

- 5 steps to planning each UOI in a naturalistic approach: suggest change, discuss change possibilities, plan the change, design the unit, and reflect on the implementation.
- Each change has a knock down effect and require resources.
- Avoid linear thinking to include the experiences of the child
- Designing benchmarking in the absence of grading.
- Uncertainty of providing full coverage in the absence of explicit content framework.
- Basing assessment on developmental concepts not knowledge with the intention to revisit at a later stage.

The challenges were related to:
- Teachers were new to the process.
- The planners are at a developing stage.
- Assessment is linked to standards not concepts.
- Large scope of content to cover in social studies and science.
- Subject integration.

### Alignment processes and strategies

- Alignment was considered from different perspectives: the IBO standards, the 8 PYP concepts, the transdisciplinary themes, and the subject areas.
- All processes included teachers as the main actors

Alignment was first linked to the State standard and to the county and State assessments and results.
- The perspectives included alignment of State standards and IBO requirements, the transdisciplinary themes, and
who compared what they had with the requirements of what to align to.
- A thorough understanding of the IBPYP documents was required and compared with some external standards to help providing sequenced coverage.

assessment with the central ideas.
- All processes included teachers and were facilitated by the IBPYP magnet coordinator.
- A thorough understanding of State standards is a prerequisite to the alignment with the IBO.
## Appendix G:

### PYP Alignment as Described by the Standards

<table>
<thead>
<tr>
<th>Standard A</th>
<th>Standard C1</th>
<th>Standard C2</th>
<th>Standard C3</th>
<th>Standard C4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment of the philosophy of the school with the philosophy of IB</td>
<td>Collaborative planning and reflection (CPR) supports the implementation of the program</td>
<td>The written curriculum reflects the IB philosophy and aligns with the requirements of the program</td>
<td>Teaching and learning align with the requirements of the program</td>
<td>Assessment reflects IB assessment philosophy and aligns with the requirements of the program(s)</td>
</tr>
<tr>
<td>The mission statements of the school and the IB</td>
<td>CPR should address all the essential elements (Knowledge, concepts, skills, attitudes, and actions)</td>
<td>Ensure a coherent PI horizontally and vertically and address the five essential elements of the PYP</td>
<td>Coherence in student learning independently of teachers and points in time by addressing the five essential elements at all levels</td>
<td>Assessment addresses all the essential elements and provide evidence of learning over time across the curriculum</td>
</tr>
<tr>
<td>Staff, administration, and pedagogical leadership understand the program</td>
<td>CPR addresses vertical and horizontal articulation: 1. Integration of the subject specific scope and sequences (SS) and the Program of Inquiry (PI) 2. Ensure a balance and articulation between the transdisciplinary PI and the stand alone subject teaching 3. Based on agreed expectations of student learning across the grades Use assessment to guide CPF</td>
<td>Build on students’ previous learning experiences: 1. Identify the knowledge, concepts, skills, and attitudes over time 2. Indicate the development of conceptual understanding, knowledge, and skills for each PYP subject area in the SS documents</td>
<td>Build on what students know and can do</td>
<td>The reporting system is aligned with the assessment philosophy of the program(s)</td>
</tr>
<tr>
<td>International mindedness and the attributes of the learner profile across the school community</td>
<td>Integrate the policies developed by the school in the written curriculum</td>
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<tr>
<td>Promote responsible action within and beyond the school community</td>
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<tr>
<td>Open communication and respect</td>
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<td>Promote language learning: e.g. mother tongue any other language</td>
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<tr>
<td>Participate in the IB world community</td>
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<td>Support inclusiveness and access to the programme to all students</td>
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<tr>
<td>Promote responsible action within and beyond the school community</td>
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Appendix H:

Subject Alignment Chart

Subject Alignment by Grade Levels and Developmental Stages

Assessments
(Bloom’s Taxonomy, 1990)

- KINDERGARTEN
- GRADE 1
- GRADE 2
- GRADE 3
- GRADE 4
- GRADE 5

Outcomes
(Concept, Skills, Knowledge, Action, Attitude)

Knowledge
(Depth of Content, Teaching Methodology)