

Making the PYP happen

Primary Years Programme

A curriculum framework for  
international primary education





Primary Years Programme

Making the PYP happen

A curriculum framework for international  
primary education

**International Baccalaureate Organization**

Buenos Aires

Cardiff

Geneva

New York

Singapore

**Primary Years Programme**  
**Making the PYP happen: A curriculum framework for**  
**international primary education**

Published January 2007

International Baccalaureate Organization  
Peterson House, Malthouse Avenue, Cardiff Gate  
Cardiff, Wales GB CF23 8GL  
United Kingdom  
Phone: + 44 29 2054 7777  
Fax: + 44 29 2054 7778  
Web site: <http://www.ibo.org>

© International Baccalaureate Organization 2007

The International Baccalaureate Organization (IBO) was established in 1968 and is a non-profit, international educational foundation registered in Switzerland.

The IBO is grateful for permission to reproduce and/or translate any copyright material used in this publication. Acknowledgments are included, where appropriate, and, if notified, the IBO will be pleased to rectify any errors or omissions at the earliest opportunity.

IBO merchandise and publications in its official and working languages can be purchased through the IB store at <http://store.ibo.org>. General ordering queries should be directed to the sales and marketing department in Cardiff.

Phone: +44 29 2054 7746  
Fax: +44 29 2054 7779  
E-mail: [sales@ibo.org](mailto:sales@ibo.org)

# Contents

<b>A curriculum framework for international primary education</b>	<b>1</b>
Introduction	1
What are the beliefs and values that drive the PYP?	2
What do we believe international education to be?	2
International-mindedness: the PYP perspective	2
How does a PYP school develop international-mindedness within its community of learners?	5
What do we believe about how children learn?	6
What is curriculum?	8
What do we want to learn? The written curriculum	10
Knowledge: what do we want students to know about?	11
Concepts: what do we want students to understand?	15
Skills: what do we want students to be able to do?	20
Attitudes: what do we want students to feel, value and demonstrate?	24
Action: how do we want students to act?	25
How best will we learn? The taught curriculum	28
What are the connections between the written curriculum and classroom practice—the taught curriculum?	28
Why is a commitment to inquiry and the construction of meaning important?	28
What does inquiry look like?	29
How do we plan for this kind of learning?	30
How do we plan for assessment?	31
Using the planner	31
The PYP planner	33
The PYP bubble planner	37
Evaluating a written planner for an inquiry	41
Good PYP practice	41
The role of the adult	42
Structuring the environment for students	43
The role of ICT	43
How will we know what we have learned? The assessed curriculum	44
What is the PYP perspective on assessment?	44
Assessing: how do we discover what students have learned?	45
Recording: how do we collect and analyse the data?	47
Reporting: how do we choose to communicate information about assessment?	51
The exhibition	53
A school's assessment policy	54

Understanding the PYP from analysis to synthesis	56
The synthesis of the essential elements	56
What changes will this mean for the school?	58
What changes will this mean for teachers?	59
PYP practices	60
The PYP as a holistic programme	62
Bibliography	63

---

## **Annex: Subject areas** **67**

Introduction	67
Language in the Primary Years Programme	68
Mathematics in the Primary Years Programme	81
Science in the Primary Years Programme	93
Social studies in the Primary Years Programme	103
Personal, social and physical education in the Primary Years Programme	112
Arts in the Primary Years Programme	128

# Introduction

*Making the PYP happen: A curriculum framework for international primary education* is an in-depth guide to all aspects of student learning in the context of the Primary Years Programme (PYP) of the International Baccalaureate Organization (IBO). Within the PYP it is believed student learning is best done when it is authentic—relevant to the “real” world; and transdisciplinary—where the learning is not confined within the boundaries of traditional subject areas but is supported and enriched by them. It is a programme that each student will engage with in ways that are developmentally appropriate and it is intended that schools will implement the programme in an inclusive manner.

It is a guide to curriculum in the traditional sense of a written set of objectives (“What do we want students to learn?”) but also a guide to the theory behind, and application of, good classroom practice (“How best will they learn?”), and including effective and appropriate assessment (“How will we know what they have learned?”). Since the PYP curriculum is viewed as an articulated and iterative model, these three components of the curriculum model have been used to organize the implementation of the programme.

The PYP represents a combination of wide-ranging research and experience—excellent practice derived from a variety of national system and independent schools, and from IB World Schools offering a coherent programme of international education. In translating the thinking represented in this document into practice, it is essential for teachers to use the practical material that is included to plan their teaching and assessing, and to evaluate their work for successful implementation of the programme. The *PYP in the early childhood years (3–5 years)* (2000) and the *PYP assessment handbook* (2001) have now been incorporated into this revised document.

*Making the PYP happen: A curriculum framework for international primary education* is also a response to practical questions raised by school leaders who are often obliged to respond to pressures from many, sometimes conflicting, sources. It is likely that they might appreciate some support themselves, in the form of the best advice that the IBO can offer—a concise, accessible overview of key issues linked to practical ideas for action. In the PYP, it is recognized that improvements, and therefore changes, in the classroom only happen in the context of overall school improvement. Given the vital role of the school’s leadership in this process, it is clear that the implementation of the PYP curriculum framework will depend to a large extent on the support and, more importantly, the practical involvement of the school’s leadership. Further support for PYP principals and coordinators can be found in *Making the PYP happen: Pedagogical leadership in a PYP school* (published separately).

The IBO trusts that these publications will serve their purpose and prove to be useful resources as we work together to improve the quality of learning for students, teachers, parents and administrators in the international community of learners.

## What are the beliefs and values that drive the PYP?

### What do we believe international education to be?

A driving force behind the PYP is a deeply held philosophy about the nature of international education, a philosophy expressed in the statements that follow. Firstly, the mission statement of the IBO expresses the IBO's overall purpose as an organization promoting and developing programmes of international education. Secondly, the section "International-mindedness: the PYP perspective" sets out our beliefs and values as defined by the outcomes of student learning in PYP schools. The IBO defines this learning through a learner profile that encompasses the aims of the curriculum.

Additionally, this section goes on to identify policies and practices within our schools that are worth examining and developing further as we strive to become ever more internationally minded communities of learners.

#### **The mission statement of the International Baccalaureate Organization**

The International Baccalaureate Organization aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the IBO works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment.

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.

### International-mindedness: the PYP perspective

In the PYP, the attempt to define international-mindedness in increasingly clear terms, and the struggle to move closer to that ideal in practice, are central to the mission of PYP schools.

Given the variety and complexity of PYP schools, and the elusive nature of the concept itself, it would be naive to propose any simple definition and expect it to stand up to rigorous examination. Rather, the IBO would suggest that the definition is compound, reflecting a range of interrelated factors that are discussed throughout this document.

However, in examining these factors during the years since the inception of the PYP, one aspect of PYP schools emerges, not only as the most compelling, but also as the common ground on which PYP schools stand, the essence of what they are about. This is the kind of student we hope will graduate from a PYP school, the kind of student who, in the struggle to establish a personal set of values, will be laying the foundation upon which international-mindedness will develop and flourish. The attributes of such a learner are listed in the learner profile (see figure 1). The learner profile is central to the PYP definition of what it means to be internationally minded, and it directs schools to focus on the learning. IB World Schools should be proud to send out into the world students who exemplify the attributes expressed in this profile.



The IBO is conscious that this learner profile is value-laden and, it would say, quite rightly so, for this kind of learning is what the IBO supports, and it is the embodiment of what the IBO believes about international education. The attributes described in the learner profile are appropriate to, and achievable by, all primary years students. The teacher needs to interpret these attributes in a manner appropriate to the age and development of the student. That said, part of the adaptability and versatility of the programme lies in what these attributes may look like from one school culture to another.

In the PYP, it is both recognized and appreciated that students come into the programme from various backgrounds and with a wealth of experience. All teachers have a responsibility to assess student development in the context of the IB learner profile; it affects all students throughout the programme. Schools have a responsibility on behalf of all students to assess and report on progress in the development of the attributes of the learner profile.

What, then, is a PYP school? It is a school that, regardless of location, size or constitution, strives towards developing an internationally minded person. What is an internationally minded person? It is a person who demonstrates the attributes of the IB learner profile.

IB learner profile	
<p>The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.</p> <p>IB learners strive to be:</p>	
<b>Inquirers</b>	They develop their natural curiosity. They acquire the skills necessary to conduct inquiry and research and show independence in learning. They actively enjoy learning and this love of learning will be sustained throughout their lives.
<b>Knowledgeable</b>	They explore concepts, ideas and issues that have local and global significance. In so doing, they acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines.
<b>Thinkers</b>	They exercise initiative in applying thinking skills critically and creatively to recognize and approach complex problems, and make reasoned, ethical decisions.
<b>Communicators</b>	They understand and express ideas and information confidently and creatively in more than one language and in a variety of modes of communication. They work effectively and willingly in collaboration with others.
<b>Principled</b>	They act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual, groups and communities. They take responsibility for their own actions and the consequences that accompany them.
<b>Open-minded</b>	They understand and appreciate their own cultures and personal histories, and are open to the perspectives, values and traditions of other individuals and communities. They are accustomed to seeking and evaluating a range of points of view, and are willing to grow from the experience.
<b>Caring</b>	They show empathy, compassion and respect towards the needs and feelings of others. They have a personal commitment to service, and act to make a positive difference to the lives of others and to the environment.
<b>Risk-takers</b>	They approach unfamiliar situations and uncertainty with courage and forethought, and have the independence of spirit to explore new roles, ideas and strategies. They are brave and articulate in defending their beliefs.
<b>Balanced</b>	They understand the importance of intellectual, physical and emotional balance to achieve personal well-being for themselves and others.
<b>Reflective</b>	They give thoughtful consideration to their own learning and experience. They are able to assess and understand their strengths and limitations in order to support their learning and personal development.

Figure 1

Clearly, success in developing this profile will depend on more than just curriculum, even given the PYP inclusive definition of curriculum. It will depend on a multitude of factors, each contributing to overall success, each driven by beliefs and values embodied in the profile.

## How does a PYP school develop international-mindedness within its community of learners?

In the context of the PYP, the school is considered to be a **community of learners**. The knowledge base that informs effective practice, particularly in the areas of brain research and cognition, is continually growing, and consequently teachers need to be, and be seen to be, lifelong learners. A school's commitment to effective ongoing professional development will be the hallmark of a school energetic enough and courageous enough to embrace change for the betterment of student learning. The effect that a commitment to implement the PYP has on a school culture is substantial in all cases, and breathtaking in some.

A PYP school needs to ensure that its **mission statement** is in line with that of the IBO and that, together with the learner profile, it adds vitality to the life of the school community and has a particular impact on teaching and learning.

As well as presenting schools with a philosophical perspective on what international education may be, the PYP prescribes a **curriculum framework** of essential elements—knowledge, concepts, skills, attitudes, and action—each of which is reflected in the learner profile and is a reference point for the construction of a school's curriculum. How these essential elements help to frame the school's curriculum is explored later in this document.

One of these essential elements is the promotion of a particular set of **attitudes**—appreciation, commitment, confidence, cooperation, creativity, curiosity, empathy, enthusiasm, independence, integrity, respect and tolerance. Some attitudes contribute directly to individual attributes of the profile, for example, “empathy” to “caring”, whereas some attitudes have a more pervasive influence on the development of many of the attributes of the profile. It would be simplistic to the point of incorrectness to assume a one-to-one correspondence between the attitudes and the attributes of the profile. It would also be difficult to claim that a focus on the development of the attitudes is necessarily a precursor to the development of the attributes of the learner profile. It is more likely that an awareness on the part of the students of the attitudes valued within the community, and an explicit demonstration of those attitudes on their part, will take place along with their development in the context of the learner profile.

The IBO has developed **implementation standards** that are common across all its programmes, each of which is supported by a list of **required practices**. These standards have been developed to contribute to the complex model of international education that is exemplified by each of the programmes. For example, standard A2, relating to philosophy, states that “The school promotes international-mindedness on the part of the adults and the students in the school community”, and a practice supporting that standard, A2.5, states “The school provides students with opportunities for learning about issues that have local, national and global significance, leading to an understanding of human commonalities.”

It is appropriate to note at this point that there is a practice requiring a PYP school to offer a language, in addition to the language of instruction, to students from the age of 7. Exposing students to languages other than their mother tongue provides an insight into and an appreciation of other cultures, and an awareness of other perspectives. The complete list of standards and practices is available on the IBO web site, <http://www.ibo.org>, and in the *PYP coordinator's handbook*.

Through acknowledging and struggling to meet the diverse needs of the student—physical, social, intellectual, aesthetic, cultural—PYP schools ensure that the learning is **engaging, relevant, challenging and significant**. What adds significance to student learning in the PYP is its commitment to a **transdisciplinary model**, whereby themes of global significance that transcend the confines of the traditional subject areas frame the learning throughout the primary years, including early childhood. These themes promote an awareness of the human condition and an understanding that there is a commonality of human experience. The students explore this common ground collaboratively, from the multiple perspectives of their individual experiences and backgrounds. This sharing of experience increases the students' awareness of, and sensitivity to, the experiences of others beyond the local or national community. It is central to the programme and a critical element in developing an international perspective, which must begin with each student's ability to consider and reflect upon the point of view of someone else in the same class.

On examining the learner profile and other listed factors that contribute to international-mindedness as demonstrated in a PYP school, it is tempting to point out that these elements would be desirable in national schools as well as in international schools. International-mindedness in education is, thankfully, not the sole property of international schools. It is an ideal towards which all schools should strive, but one that carries a greater imperative for PYP schools.

To summarize, when seeking evidence of international-mindedness in PYP schools, teachers need to look at what the students are learning, how they are demonstrating that learning, and how to nurture students within the school community. They need to consider whether students are making connections between life in school, life at home and life in the world. By helping students make these connections and see that learning is connected to life, a strong foundation for future learning is established. In striving to make it happen, and in looking for indicators of success, teachers, principals and/or heads of schools need to look everywhere, since all aspects of the school, from overarching philosophy through to policies and their ensuing practices, will reflect either the presence or the absence of a sensitivity to the special nature of PYP schools.

## What do we believe about how children learn?

The PYP curriculum model is dependent on our commitment to a particular belief about how children learn, encapsulated most clearly in the constructivist approach. It is acknowledged that learners have beliefs about how the world works based on their experiences and prior learning. Those beliefs, models or constructs are revisited and revised in the light of new experiences and further learning. As we strive to make meaning of our lives and the world around us we travel continually on the cyclic path of constructing, testing, and confirming or revising our personal models of how the world works.

Vygotsky defined learning as “the creation of meaning that occurs when an individual links new knowledge with...existing knowledge” (Williams and Woods 1997). Consequently, when planning to teach it is important to ascertain students' prior knowledge, and provide experiences through the curriculum and through the environment that give them opportunities: to test and revise their models, to allow them to make connections between their previous and current perceptions, to allow them the freedom to construct their own meaning.

Other theorists, including Bruner (1990) and Gardner (1993), have also argued that the focus of teaching curriculum content needs to change to enable teachers to make connections between learners' existing knowledge and their individual learning styles in the context of new experiences. This challenge is addressed in the PYP by providing opportunities for students to build meaning and refine understanding, principally through structured **inquiry**. As students' learning and their attempts to understand the world around them are essentially social acts of communication and collaboration, this inquiry may take many forms, with students working sometimes on their own, with partners, or in larger groups.

In PYP schools, the teachers' structuring of new experiences, and the support they give to students' ideas about new experiences, are fundamental to students' knowledge, understanding, and conceptual development—the ability to have an understanding of abstract concepts, to make links between them, and to think conceptually. In the PYP it is recognized that development and learning are interrelated, and the PYP curriculum framework allows for concept development that applies across and beyond subject-specific areas.

The programme supports the student's struggle to gain understanding of the world and to learn to function comfortably within it, to move from not knowing to knowing, to identify what is real and what is not real, to acknowledge what is appropriate and what is not appropriate. To do this, the student must integrate a great deal of information, and apply this accumulation of knowledge in a cohesive and effective way.

In the PYP, it is believed that learning takes place best when it is connected to what is genuinely a component of the world around the student, not merely what is all too often contrived and then imposed upon the student in school; that the acquisition of knowledge and skills and the search for meaning and understanding are best done in the context of the exploration of relevant content. PYP schools should provide students with learning experiences that are engaging, relevant, challenging and significant, in learning environments that are stimulating and provocative, where:

- adults are sensitive facilitators of the process of empowering students to value their learning and to take responsibility for it
- students are seen as competent and are listened to
- students are encouraged to be curious, be inquisitive, ask questions, explore and interact with the environment physically, socially and intellectually
- explicit learning outcomes and the learning process are made transparent to the students
- students are supported in their struggle for mastery and control on their journey to become independent, autonomous learners
- the learning experiences are differentiated to accommodate the range of abilities and learning styles in the group
- the collaboration on the part of all the PYP teachers is high, and there is a commitment to the transdisciplinary model at the core of this programme of international education.

In the PYP, it is acknowledged that experiences during the **early years** lay the foundations for all future learning. Research indicates that the rapid rate of development that occurs in the physical, social, emotional, intellectual and aesthetic domains is particularly significant. It is our responsibility as educators to recognize and maximize this crucial stage of learning.

Although development usually occurs in recognizable and predictable directions, it is unique in each child, occurring at varying rates from child to child, and inconsistently for each child. For many children, these early years also mark the first transition from home to group experiences outside of the family and to new physical environments. The school must strive to make this adjustment as successful as possible by encouraging the development of secure and trusting relationships with new adults and peers.

Early childhood teachers are encouraged to support students' interests, build up their self-esteem and confidence, and respond to spontaneous events, as well as support the development of skills in all cognitive areas in relevant ways. Children, from birth, are full of curiosity, and the PYP provides a framework that gives crucial support for them to be active inquirers and lifelong learners.

## What is curriculum?

An aim of the PYP is to create a transdisciplinary curriculum that is engaging, relevant, challenging and significant for learners in the 3–12 age range. In developing a curriculum of international education for primary school students, the PYP definition of curriculum is broad and inclusive. The IBO believes that:

- all students should be supported to participate in the programme to the fullest extent possible
- 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.

A PYP school needs to demonstrate that all teaching and learning for which it is responsible is seen as an interpretation of the PYP in action. The influence of the PYP is pervasive within a school and has an explicit impact on all aspects of the functioning of the school community. The school community needs to accept that the effect of the PYP will be systemic and all encompassing, so that change takes place within the school for the betterment of all students. One of the aims of the PYP is to ensure that students experience coherence in their learning, regardless of which teacher has responsibility for them at any particular point in time.

Furthermore, given the PYP commitment to continuous school improvement, it is obvious that the development of **the written curriculum**, the expression of issues, concepts and ideas on paper, is necessary; but, equally obviously, this alone is not sufficient.

The interpretation of the commonalities of the written curriculum into daily practice by teachers, working in schools around the world, strengthens the connections within the global community of PYP schools. In the PYP, therefore, equal emphasis is given to methodology, to **the taught curriculum**, to suggestions for examining and improving our practice and to the provision of in-service support.

The third component in the PYP definition of curriculum, **the assessed curriculum**, is concerned with the assessment of the actual learning that takes place for each student, a component that can often be neglected or inappropriately practised. The development of a range of authentic and targeted assessment strategies, focused on the learning, brings balance and integrity to the curriculum and reminds teachers of its purpose.

The PYP definition of curriculum, then, emerges as comprising three interrelated components. In keeping with the PYP commitment to inquiry, these three components are expressed in the form of the following three open-ended questions, each of which compels teachers to think deeply about their own practice with regard to student learning.

**What do we want to learn?**

**The written curriculum**

the identification of a framework of what's worth knowing

**How best will we learn?**

**The taught curriculum**

the theory and application of good classroom practice

**How will we know what we have learned?**

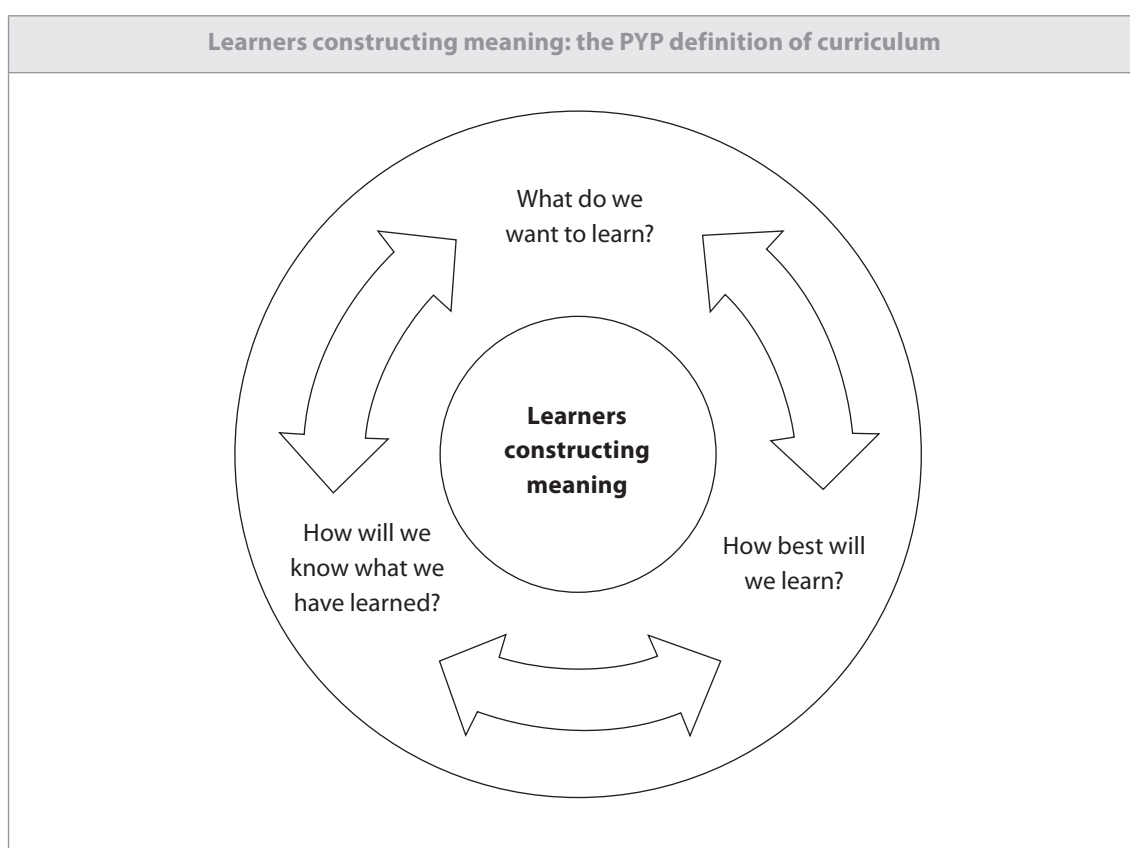
**The assessed curriculum**

the theory and application of effective assessment

In the PYP the pronoun “we” is used in each question, rather than referring directly to the students, for reasons that reflect the PYP belief about a school being a community of learners. While recognizing that a school’s primary responsibility is for student learning, a school is encouraged to see itself as a community where everyone is a learner, where teachers must continually learn about the needs and capabilities of each student, the content with which they are engaged, and about their own practice and ongoing professional development.

Presenting the questions in this form prompts teachers to present them in a similar way to students, providing an opportunity to make them aware of the curriculum framework and of the uniqueness of the PYP, and directly engaging them in thinking about their own learning.

In PYP documents, these three questions are presented as a composite curriculum model where each component is equally valued. In figure 2, the double-headed arrows indicate that developing, implementing and assessing the school’s curriculum is an iterative process, whereby each component informs the other two. This is not a linear curriculum model that ends with the assessment component. Rather, it illustrates a process that is more finely tuned, whereby all three components are woven together throughout. Most certainly it requires that consideration of the assessment of the learning be thought about much sooner, and in more depth, than is traditionally the case.



**Figure 2**

## What do we want to learn? The written curriculum

In the PYP a balance is sought between acquisition of essential knowledge and skills, development of conceptual understanding, demonstration of positive attitudes, and taking of responsible action.

In terms of achieving this balance, the five essential elements of the written curriculum are emphasized. They are shown in figure 3.

Essential elements of the written curriculum	
<b>Knowledge</b>	Significant, relevant content that we wish the students to explore and know about, taking into consideration their prior experience and understanding.
<b>Concepts</b>	Powerful ideas that have relevance within the subject areas but also transcend them and that students must explore and re-explore in order to develop a coherent, in-depth understanding.
<b>Skills</b>	Those capabilities that the students need to demonstrate to succeed in a changing, challenging world, which may be disciplinary or transdisciplinary in nature.
<b>Attitudes</b>	Dispositions that are expressions of fundamental values, beliefs and feelings about learning, the environment and people.
<b>Action</b>	Demonstrations of deeper learning in responsible behaviour through responsible action; a manifestation in practice of the other essential elements.

Figure 3

The PYP written curriculum should be planned and used in a developmentally appropriate way; it should take into account what students should learn and be able to do on the basis of what is best for their development in the long term, rather than simply on the basis of what works in the short term. It should be based on each student's needs, interests and competencies. This developmental approach takes into account:

- the characteristics, capabilities and interests that are normal for the age group
- the different rates at which students learn and the wide range of normal variation that can occur in an age group
- that individual patterns of development are complex and not simply sequential
- that learning is a balance between the intellectual, the social and the personal; each is important and each is interlinked with the others
- that the maturity of each student depends on the developmental stages he or she has already gone through, and the effects of earlier positive and negative feedback.

Although the five essential elements are presented under the written curriculum, they resonate throughout the entire PYP curriculum model.



In the sections that follow, each of these elements is explored more fully so that the reader may gain an insight into the importance of each element, how and why it has been selected, and how it will be incorporated into classroom practice.

## Knowledge: what do we want students to know about?

### Is it possible to identify a particular body of knowledge for PYP schools?

Due to the particular difficulties faced by schools implementing a programme of international education, it is immensely important that the PYP curriculum model includes an outline of a coherent, flexible and interpretive written curriculum that frames a body of knowledge which supports the IBO, its mission statement and its learner profile. This decision is driven by the belief that there are areas of knowledge that, while important for any student, are especially **significant** in schools that aim to promote international-mindedness on the part of their students.

The importance of the traditional subject areas is acknowledged: language; mathematics; social studies; science; personal, social and physical education; and the arts; and indeed these are specified as components of the PYP curriculum model. The knowledge, concepts and skills that constitute the essence of each of these subject areas, as reflected in the PYP, can be found in the annex at the back of this document.

In addition, overall expectations for each subject, within each age range, are specified in detailed **scope and sequence** documents. These are available to schools as exemplar material. While some schools may adopt these scope and sequences, other PYP schools may choose to use locally or nationally determined subject-based syllabuses. In the PYP, information and communication technology (ICT) is not identified as a particular subject area, but is recognized as a tool that facilitates learning throughout the curriculum.

However, it is also recognized that educating students in a set of isolated subject areas, while necessary, is not sufficient. Of equal importance is the need to acquire skills in context, and to explore content that is relevant to students, and transcends the boundaries of the traditional subjects. “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” (Boyer 1995). Ernest Boyer proposed that students explore a set of themes that represents shared human experiences such as “response to the aesthetic” and “membership in groups”. He referred to these as “core commonalities”.

Boyer’s work has been seminal to the development of the PYP. Debate and discussion, representing multiple perspectives, about this idea of human commonalities has led to the selection of six transdisciplinary themes (see figure 4) that are considered essential in the context of a programme of international education. These themes:

- have global significance—for all students in all cultures
- offer students the opportunity to explore the commonalities of human experience
- are supported by knowledge, concepts and skills from the traditional subject areas but utilize them in ways that transcend the confines of these subjects, thereby contributing to a transdisciplinary model of teaching and learning
- will be revisited throughout the students’ years of schooling, so that the end result is immersion in broad-ranging, in-depth, articulated curriculum content
- contribute to the common ground that unifies the curriculums in all PYP schools.

PYP transdisciplinary themes
<p><b>Who we are</b></p> <p>An inquiry into the nature of the self; beliefs and values; personal, physical, mental, social and spiritual health; human relationships including families, friends, communities, and cultures; rights and responsibilities; what it means to be human.</p>
<p><b>Where we are in place and time</b></p> <p>An inquiry into orientation in place and time; personal histories; homes and journeys; the discoveries, explorations and migrations of humankind; the relationships between and the interconnectedness of individuals and civilizations, from local and global perspectives.</p>
<p><b>How we express ourselves</b></p> <p>An inquiry into the ways in which we discover and express ideas, feelings, nature, culture, beliefs and values; the ways in which we reflect on, extend and enjoy our creativity; our appreciation of the aesthetic.</p>
<p><b>How the world works</b></p> <p>An inquiry into the natural world and its laws; the interaction between the natural world (physical and biological) and human societies; how humans use their understanding of scientific principles; the impact of scientific and technological advances on society and on the environment.</p>
<p><b>How we organize ourselves</b></p> <p>An inquiry into the interconnectedness of human-made systems and communities; the structure and function of organizations; societal decision-making; economic activities and their impact on humankind and the environment.</p>
<p><b>Sharing the planet</b></p> <p>An inquiry into rights and responsibilities in the struggle to share finite resources with other people and with other living things; communities and the relationships within and between them; access to equal opportunities; peace and conflict resolution.</p>

Figure 4

Students inquire into, and learn about, these globally significant issues in the context of **units of inquiry**, each of which addresses a **central idea** relevant to a particular transdisciplinary theme. Lines of inquiry are identified in order to explore the scope of the central idea for each unit (see figure 5).

These units collectively constitute the school's **programme of inquiry**, a sample of which is available on the IBO online curriculum centre (OCC) at <http://occ.ibo.org>. The transdisciplinary themes provide a basis for much discussion and interpretation within a school, and allow for both local and global perspectives to be explored in the units. Consequently, it would be inappropriate for the PYP to attempt to produce a definitive programme of inquiry to be used by all schools. In fact, the PYP philosophy and practices have more of an impact on a school's culture when the individuals in the school work collaboratively to develop

a transdisciplinary programme of inquiry designed to meet the school's needs. Schools should explore the possibilities for links between the units taught at each year level, and also across the different age ranges, so that the programme of inquiry is articulated both vertically and horizontally.

Examples of central ideas and corresponding lines of inquiry
<p><b>Transdisciplinary theme:</b> How we organize ourselves</p> <p><b>Title of unit of inquiry:</b> Our school (for 4–5 year olds)</p> <p><b>Central idea:</b> Schools are organized to help us learn and play together.</p> <p><b>An inquiry into:</b></p> <ul style="list-style-type: none"> <li>• what a school is</li> <li>• what we do in school</li> <li>• how our school works</li> <li>• who works in our school and the jobs they do.</li> </ul>
<p><b>Transdisciplinary theme:</b> How we express ourselves</p> <p><b>Title of unit of inquiry:</b> The impact of advertising (for 9–10 year olds)</p> <p><b>Central idea:</b> Advertising influences how we think and the choices we make.</p> <p><b>An inquiry into:</b></p> <ul style="list-style-type: none"> <li>• the purpose of advertising</li> <li>• the types, styles and locations of advertisements</li> <li>• the devices used to make advertising effective and to influence our choices (use of language, images and sounds)</li> <li>• the connection between advertising and target groups, particularly children.</li> </ul>
<p><b>Transdisciplinary theme:</b> Who we are</p> <p><b>Title of unit of inquiry:</b> Learning to live, living to learn (for 11–12 year olds)</p> <p><b>Central idea:</b> Learning is a fundamental characteristic of humans that connects them to the world.</p> <p><b>An inquiry into:</b></p> <ul style="list-style-type: none"> <li>• what learning is and how we construct meaning</li> <li>• how the brain functions</li> <li>• human behaviour and responses to change.</li> </ul>

Figure 5

In developing an individual unit of inquiry, organized around a central idea, the following are proposed as useful criteria. Each unit should be:

<b>Engaging</b>	Of interest to the students, and involving them actively in their own learning.
<b>Relevant</b>	Linked to the students' prior knowledge and experience, and current circumstances, and therefore placing learning in a context connected to the lives of the students.
<b>Challenging</b>	Extending the prior knowledge and experience of the students to increase their competencies and understanding.
<b>Significant</b>	Contributing to an understanding of the transdisciplinary nature of the theme, and therefore to an understanding of commonality of human experiences.

It is necessary to achieve a balance between the programme of inquiry and any additional single-subject teaching. Consequently, the planning teams, usually consisting of the teachers at each year level, need to plan the units of inquiry together with the remainder of the curriculum for the year. The relationship between the subject areas and the units of inquiry will change from one unit to another. In teasing out this relationship, it is worth considering the distinctions that Michael Halliday (1980) made about language learning: that students learn language, learn about language, and learn through language. These distinctions are worth reflecting upon for all subject areas.

It would be a useful exercise for each planning team to assess the dynamic relationship between the programme of inquiry and single-subject teaching, from one unit to the other, to ensure the programme of inquiry remains the definitive experience from the students' standpoint (see figure 6).

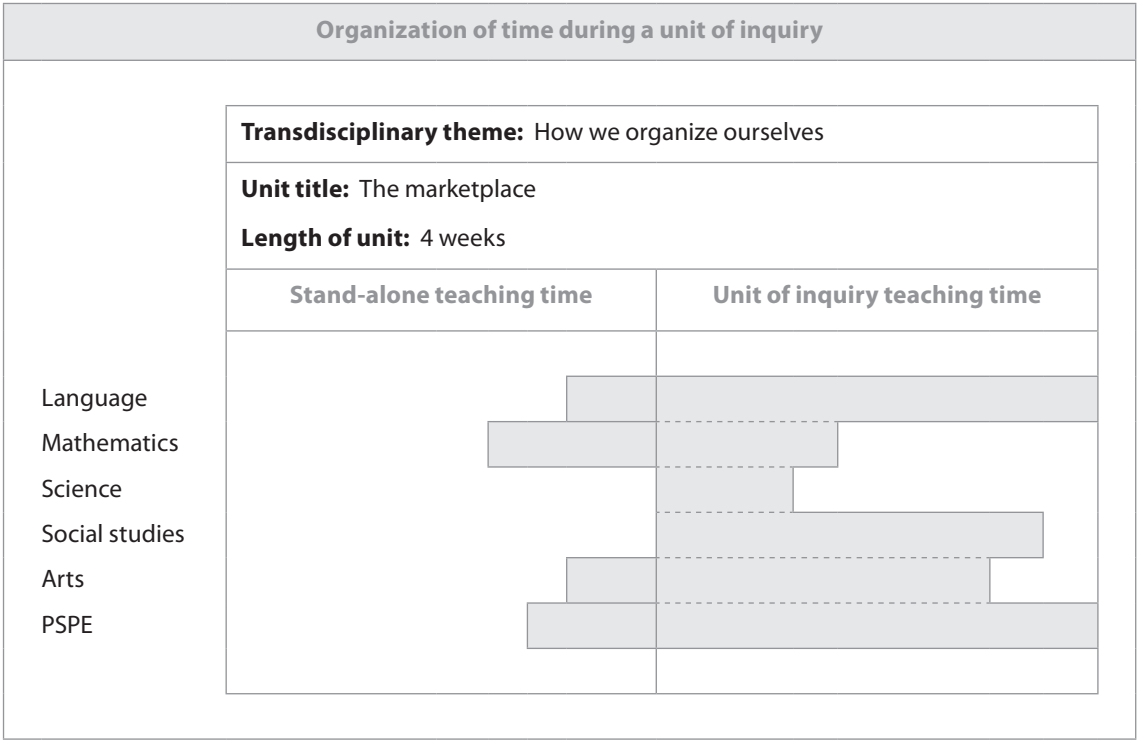


Figure 6

A **whole-school approach** should be taken when developing and refining a programme of inquiry. The proposed units of inquiry for each year level need to be articulated from one year to the other to ensure both horizontal and vertical articulation. This will ensure a robust programme of inquiry that provides students with experiences that are coherent and connected throughout their time in the school.

The intent of this document is to describe as unambiguously as possible what the PYP is; but the opportunity should also be taken to explain what the PYP is not. In this case, it is important to understand that the transdisciplinary programme of inquiry is not merely a novel way of repackaging subject-specific content.

The driving question to be asked each year is “What is really worth knowing that allows students’ understanding of the transdisciplinary themes to develop and evolve?” The PYP, because of its commitment to transdisciplinary learning, allows schools to cut down on the amount of subject-specific content they may have been in the habit of delivering. Many PYP schools do not have autonomy in deciding what needs to be covered in the subject areas. That notwithstanding, it is advocated strongly that the principle of “less is more” should apply. The transdisciplinary themes provide the framework for a highly defined, focused, in-depth programme that eliminates redundancy and avoids the pitfalls of a personality-driven curriculum. The collaboration that is required on the part of all the PYP teachers in a school to develop a programme of inquiry means that it will have a resilience above and beyond the talents and resourcefulness of individual teachers in the school.

## Concepts: what do we want students to understand?

### Why include concepts as an essential element?

Central to the philosophy of the PYP is the principle that purposeful, structured inquiry is a powerful vehicle for learning that promotes meaning and understanding, and challenges students to engage with significant ideas. Hence in the PYP there is also a commitment to a **concept-driven curriculum** as a means of supporting that inquiry.

The decision to structure the PYP curriculum around important concepts is driven by the following beliefs.

- Education for the understanding of significant ideas has often been sacrificed for the memorization of isolated facts and the mastery of skills out of context. The expansion of the curriculum and the pressure to cover the syllabus have resulted in many students leaving school with superficial levels of understanding.
- By starting with the students’ prior knowledge, and by confronting and developing their earlier conceptions and constructs, teachers can begin to promote real understanding.
- The exploration and re-exploration of concepts lead students towards an appreciation of ideas that transcend disciplinary boundaries, as well as towards a sense of the essence of each subject area. Students gradually work towards a deepening of their conceptual understanding as they approach those concepts from a range of perspectives.
- Transdisciplinary units, where concepts are used to support and structure the inquiries, provide a context in which students can understand and, at the same time, acquire essential knowledge, skills and attitudes.
- A concept-driven curriculum helps the learner to construct meaning through improved critical thinking and the transfer of knowledge.
- Transdisciplinary concepts increase coherence across the curriculum.

By identifying concepts that have relevance within each subject area, and across and beyond all subject areas, the PYP has defined an essential element for supporting its transdisciplinary model of teaching and learning. These concepts provide a structure for the exploration of significant and authentic content. In the course of this exploration, students deepen their understanding of the concepts.

## Is it possible to identify a set of concepts around which to structure a curriculum?

The early developers of the programme analysed curriculum models used in different national systems and in international schools. This analysis focused, firstly, on whether there was a consensus on a set of concepts in which each has universal significance, and secondly, on the role given to concepts in the various curriculum models. The developers concluded that there are clusters of important ideas that can be grouped usefully under a set of overarching or key concepts, each of which has major significance, regardless of time or place, within and across disciplines.

Consequently, the PYP provides a framework for the curriculum, including key concepts as one of the essential elements. It is accepted that these are not, in any sense, the only concepts worth exploring. Taken together, they form a powerful curriculum component that drives the teacher- and/or student-constructed inquiries that lie at the heart of the PYP curriculum.

The key concepts, also expressed as key questions, help teachers and students to consider ways of thinking and learning about the world, and act as a provocation to extend and deepen student inquiries.

## Which concepts were chosen and why?

A set of eight concepts was drawn up, each of which, it is felt, is of major importance in the design of a transdisciplinary curriculum. These concepts are:

- form
- function
- causation
- change
- connection
- perspective
- responsibility
- reflection.

Each of these key concepts is presented in figure 7 together with:

### A key concept question

The key question that arises from this concept, presented in the form most useful for supporting inquiry.

Each key question is presented here in its most basic, generic form, for example, “What is it like?” When working on a unit of inquiry focused on a central idea linked to a particular subject area strand, the question may be more specific, for example, “What is this place like?”

### A definition

A generic explanation, provided so that everyone using the curriculum is working with a common understanding of terms.

<b>A rationale</b>	The reasons for the selection of the concept as an important structural component for working with students in an international programme of education.
<b>Examples of related concepts</b>	<p>Some examples of concepts derived from the subject areas that relate to the key concept, provided as a springboard for the generation of further lines of inquiry.</p> <p>The related concepts deepen an understanding of the subject areas while providing further opportunities to make connections throughout the learning, from one subject to another, and between disciplinary and transdisciplinary learning.</p>

## In what sense do these concepts drive the curriculum?

The concepts that are central to the curriculum are presented in the form of key questions. It is these questions, used flexibly by teachers and students when planning an inquiry-based unit, that shape that unit, giving it direction and purpose. It is in this sense that the key questions, and the concepts to which they relate, are said to drive the PYP curriculum.

- Since inquiry is a vehicle for learning in the PYP, the natural way to present the key concepts is in the form of broad, open-ended questions.
- Presented in this way, the concepts liberate the thinking of teachers and students, suggesting a range of further questions, each one leading to productive lines of inquiry.
- When viewed as a set of questions, the concepts form a research tool that is both manageable and open-ended. The concepts are not only key in the sense of important; they also provide a key—a way into a body of knowledge through structured and sustained inquiry. They place no limits on breadth of knowledge or on depths of understanding, and therefore provide access to every student, regardless of particular aptitudes.
- These questions should not be interpreted in any restrictive sense as the only questions, to be used in strict order, or to be given equal weight in every inquiry. Rather, they represent an approach, a springboard, an introduction to a way of thinking about teaching and learning. The most relevant key concepts should be identified and documented in every unit of inquiry.

In summary, the PYP concepts underpin student inquiries throughout the planned and unplanned curriculum. It is also recognized that these concepts have different interpretations and applications as students develop and deepen their understanding, in the context of transdisciplinary units, and across each subject area. The concepts, with their generic perceptions, together with the subject-specific perceptions, can be found in the annex at the end of this document.

PYP key concepts and related questions	
Form	
<b>Key question</b>	What is it like?
<b>Definition</b>	The understanding that everything has a form with recognizable features that can be observed, identified, described and categorized.
<b>Rationale</b>	This concept was selected because the ability to observe, identify, describe and categorize is fundamental to human learning within and across all disciplines.
<b>Examples of related concepts</b>	Properties, structure, similarities, differences, pattern.
Function	
<b>Key question</b>	How does it work?
<b>Definition</b>	The understanding that everything has a purpose, a role or a way of behaving that can be investigated.
<b>Rationale</b>	This concept was selected because the ability to analyse function, role, behaviour and the ways in which things work is fundamental to learning within and across all disciplines.
<b>Examples of related concepts</b>	Behaviour, communication, pattern, role, systems.
Causation	
<b>Key question</b>	Why is it like it is?
<b>Definition</b>	The understanding that things do not just happen, that there are causal relationships at work, and that actions have consequences.
<b>Rationale</b>	This concept was selected because of the importance of prompting students to ask "Why?" and of helping them to recognize that actions and events have reasons and consequences. The analysis of causal relationships is significant within and across all disciplines.
<b>Examples of related concepts</b>	Consequences, sequences, pattern, impact.

Figure 7



PYP key concepts and related questions	
Change	
<b>Key question</b>	How is it changing?
<b>Definition</b>	The understanding that change is the process of movement from one state to another. It is universal and inevitable.
<b>Rationale</b>	This concept was selected, not only because it is such a universal feature of all existence, but also because it has particular relevance to students developing international-mindedness who are growing up in a world in which the pace of change, both local and global, is accelerating.
<b>Examples of related concepts</b>	Adaptation, growth, cycles, sequences, transformation.
Connection	
<b>Key question</b>	How is it connected to other things?
<b>Definition</b>	The understanding that we live in a world of interacting systems in which the actions of any individual element affect others.
<b>Rationale</b>	This concept was selected because of the importance of appreciating that nothing exists in a vacuum but, rather, as an element in a system; that the relationships within and among systems are often complex, and that changes in one aspect of a system will have consequences, even though these may not be immediately apparent; that we must consider the impact of our actions on others, whether at the immediate, personal level or at the level of far-reaching decisions affecting environments and communities.
<b>Examples of related concepts</b>	Systems, relationships, networks, homeostasis, interdependence.
Perspective	
<b>Key question</b>	What are the points of view?
<b>Definition</b>	The understanding that knowledge is moderated by perspectives; different perspectives lead to different interpretations, understandings and findings; perspectives may be individual, group, cultural or disciplinary.
<b>Rationale</b>	This concept was selected because of the compelling need to develop in students the disposition towards rejecting simplistic, biased interpretations, towards seeking and considering the points of view of others, and towards developing defensible interpretations.
<b>Examples of related concepts</b>	Subjectivity, truth, beliefs, opinion, prejudice.

Figure 7 (continued)

PYP key concepts and related questions	
Responsibility	
<b>Key question</b>	What is our responsibility?
<b>Definition</b>	The understanding that people make choices based on their understandings, and the actions they take as a result do make a difference.
<b>Rationale</b>	This concept was selected because of the need to develop in students the disposition towards identifying and assuming responsibility, and towards taking socially responsible action. This concept is directly linked to the action component, one of the essential elements in the PYP curriculum.
<b>Examples of related concepts</b>	Rights, citizenship, values, justice, initiative.
Reflection	
<b>Key question</b>	How do we know?
<b>Definition</b>	The understanding that there are different ways of knowing, and that it is important to reflect on our conclusions, to consider our methods of reasoning, and the quality and the reliability of the evidence we have considered.
<b>Rationale</b>	This concept was selected for a series of interrelated reasons. It challenges the students to examine their evidence, methods and conclusions. In doing so, it extends their thinking into the higher order of metacognition, begins to acquaint them with what it means to know in different disciplines, and encourages them to be rigorous in examining evidence for potential bias or other inaccuracy.
<b>Examples of related concepts</b>	Review, interpretation, evidence, responsibility, behaviour.

Figure 7 (continued)

## Skills: what do we want students to be able to do?

### Why include skills as an essential element?

The search for understanding is central to the beliefs and practices of the PYP. However, the emphasis on the development of conceptual understanding does not preclude a recognition of the importance of developing skills. The construction of meaning and, therefore, of understanding is complemented by the students acquiring and applying a range of skills. These skills are best developed in the context of authentic situations such as those offered through the PYP units of inquiry.

While it is important for all teachers to foster and support the development of skills by providing opportunities embedded in authentic learning experiences, it is particularly relevant for teachers of the younger students to interpret this expectation in ways that are appropriate for their group of learners.

When learning about and through the subject areas, students acquire the particular skills that define the discipline of those subjects. For example, in language the students become literate, and in mathematics they become numerate. The acquisition of literacy and numeracy, in its broadest sense, is essential, as these skills provide students with the tools of inquiry. Nonetheless, the PYP position is that, in order to conduct purposeful inquiry and in order to be well prepared for lifelong learning, students need to master a whole range of skills beyond those normally referred to as basic. These include skills, relevant to all the subject areas and also transcending them, needed to support fully the complexities of the lives of the students.

## What transdisciplinary skills does the PYP suggest?

Within their learning throughout the programme, students acquire and apply a set of transdisciplinary skills: social skills, communication skills, thinking skills, research skills and self-management skills (see figure 8). These skills are valuable, not only in the units of inquiry, but also for any teaching and learning that goes on within the classroom, and in life outside the school.

PYP transdisciplinary skills	
Thinking skills	
<b>Acquisition of knowledge</b>	Gaining specific facts, ideas, vocabulary; remembering in a similar form.
<b>Comprehension</b>	Grasping meaning from material learned; communicating and interpreting learning.
<b>Application</b>	Making use of previously acquired knowledge in practical or new ways.
<b>Analysis</b>	Taking knowledge or ideas apart; separating into component parts; seeing relationships; finding unique characteristics.
<b>Synthesis</b>	Combining parts to create wholes; creating, designing, developing and innovating.
<b>Evaluation</b>	Making judgments or decisions based on chosen criteria; standards and conditions.
<b>Dialectical thought</b>	Thinking about two or more different points of view at the same time; understanding those points of view; being able to construct an argument for each point of view based on knowledge of the other(s); realizing that other people can also take one's own point of view.
<b>Metacognition</b>	Analysing one's own and others' thought processes; thinking about how one thinks and how one learns.

Figure 8

PYP transdisciplinary skills	
Social skills	
<b>Accepting responsibility</b>	Taking on and completing tasks in an appropriate manner; being willing to assume a share of the responsibility.
<b>Respecting others</b>	Listening sensitively to others; making decisions based on fairness and equality; recognizing that others' beliefs, viewpoints, religions and ideas may differ from one's own; stating one's opinion without hurting others.
<b>Cooperating</b>	Working cooperatively in a group; being courteous to others; sharing materials; taking turns.
<b>Resolving conflict</b>	Listening carefully to others; compromising; reacting reasonably to the situation; accepting responsibility appropriately; being fair.
<b>Group decision-making</b>	Listening to others; discussing ideas; asking questions; working towards and obtaining consensus.
<b>Adopting a variety of group roles</b>	Understanding what behaviour is appropriate in a given situation and acting accordingly; being a leader in some circumstances, a follower in others.
Communication skills	
<b>Listening</b>	Listening to directions; listening to others; listening to information.
<b>Speaking</b>	Speaking clearly; giving oral reports to small and large groups; expressing ideas clearly and logically; stating opinions.
<b>Reading</b>	Reading a variety of sources for information and pleasure; comprehending what has been read; making inferences and drawing conclusions.
<b>Writing</b>	Recording information and observations; taking notes and paraphrasing; writing summaries; writing reports; keeping a journal or record.
<b>Viewing</b>	Interpreting and analysing visuals and multimedia; understanding the ways in which images and language interact to convey ideas, values and beliefs; making informed choices about personal viewing experiences.
<b>Presenting</b>	Constructing visuals and multimedia for a range of purposes and audiences; communicating information and ideas through a variety of visual media; using appropriate technology for effective presentation and representation.
<b>Non-verbal communication</b>	Recognizing the meaning of visual and kinesthetic communication; recognizing and creating signs; interpreting and utilizing symbols.

Figure 8 (continued)

PYP transdisciplinary skills	
Self-management skills	
<b>Gross motor skills</b>	Exhibiting skills in which groups of large muscles are used and the factor of strength is primary.
<b>Fine motor skills</b>	Exhibiting skills in which precision in delicate muscle systems is required.
<b>Spatial awareness</b>	Displaying a sensitivity to the position of objects in relation to oneself or each other.
<b>Organization</b>	Planning and carrying out activities effectively.
<b>Time management</b>	Using time effectively and appropriately.
<b>Safety</b>	Engaging in personal behaviour that avoids placing oneself or others in danger or at risk.
<b>Healthy lifestyle</b>	Making informed choices to achieve a balance in nutrition, rest, relaxation and exercise; practising appropriate hygiene and self-care.
<b>Codes of behaviour</b>	Knowing and applying appropriate rules or operating procedures of groups of people.
<b>Informed choices</b>	Selecting an appropriate course of action or behaviour based on fact or opinion.
Research skills	
<b>Formulating questions</b>	Identifying something one wants or needs to know and asking compelling and relevant questions that can be researched.
<b>Observing</b>	Using all the senses to notice relevant details.
<b>Planning</b>	Developing a course of action; writing an outline; devising ways of finding out necessary information.
<b>Collecting data</b>	Gathering information from a variety of first- and second-hand sources such as maps, surveys, direct observation, books, films, people, museums and ICT.
<b>Recording data</b>	Describing and recording observations by drawing, note taking, making charts, tallying, writing statements.
<b>Organizing data</b>	Sorting and categorizing information; arranging into understandable forms such as narrative descriptions, tables, timelines, graphs and diagrams.
<b>Interpreting data</b>	Drawing conclusions from relationships and patterns that emerge from organized data.
<b>Presenting research findings</b>	Effectively communicating what has been learned; choosing appropriate media.

Figure 8 (continued)

## Attitudes: what do we want students to feel, value and demonstrate?

### Why include attitudes as an essential element?

While recognizing the importance of knowledge, concepts and skills, these alone do not make an internationally minded person. It is vital that there is also focus on the development of personal attitudes towards people, towards the environment and towards learning, attitudes that contribute to the well-being of the individual and of the group. By deciding that attitudes (see figure 9) need to be an essential element of the programme, the PYP is making a commitment to a values-laden curriculum.

### What attitudes does the PYP suggest that schools should encourage?

PYP attitudes	
In PYP schools, students should demonstrate:	
<b>Appreciation</b>	Appreciating the wonder and beauty of the world and its people.
<b>Commitment</b>	Being committed to their own learning, persevering and showing self-discipline and responsibility.
<b>Confidence</b>	Feeling confident in their ability as learners, having the courage to take risks, applying what they have learned and making appropriate decisions and choices.
<b>Cooperation</b>	Cooperating, collaborating, and leading or following as the situation demands.
<b>Creativity</b>	Being creative and imaginative in their thinking and in their approach to problems and dilemmas.
<b>Curiosity</b>	Being curious about the nature of learning, about the world, its people and cultures.
<b>Empathy</b>	Imagining themselves in another's situation in order to understand his or her reasoning and emotions, so as to be open-minded and reflective about the perspectives of others.
<b>Enthusiasm</b>	Enjoying learning and willingly putting the effort into the process.
<b>Independence</b>	Thinking and acting independently, making their own judgments based on reasoned argument, and being able to defend their judgments.
<b>Integrity</b>	Being honest and demonstrating a considered sense of fairness.
<b>Respect</b>	Respecting themselves, others and the world around them.
<b>Tolerance</b>	Being sensitive about differences and diversity in the world and being responsive to the needs of others.

Figure 9

As the attributes of the IB learner profile are relevant to both students and adults in a PYP school, so too are the PYP attitudes. They need to be interpreted and modelled for students. The purpose of the modelling is not to encourage students to mimic but to provide support—a metacognitive framework—to help students reflect on and develop their own set of values, albeit in the context of that being demonstrated.

The teacher should look for authentic demonstrations of these attitudes in the daily lives of the students in order to raise an awareness of, and build an appreciation for them. The attitudes should not be part of a hidden curriculum but should be part of the vernacular of the PYP classroom, explicitly part of classroom discussions, and reflected in teachers' anecdotal records. They should also be addressed explicitly within the taught and assessed components of the curriculum so that learning experiences and assessment strategies are designed to support and promote the attitudes.

The descriptions of the attitudes are to some degree a reflection of parts of the IB learner profile. Although this congruency is understandable, the attitudes should be considered as "habits of mind" that inform curriculum decisions made across all three components of the PYP curriculum model. Their impact will affect deeply the learning environment and the personal interactions that occur within it.

## Action: how do we want students to act?

### **Why include action as an essential element?**

In the PYP, it is believed that education must extend beyond the intellectual to include not only socially responsible attitudes but also thoughtful and appropriate action. An explicit expectation of the PYP is that successful inquiry will lead to responsible action, initiated by the student as a result of the learning process. This action will extend the student's learning, or it may have a wider social impact, and will clearly look different within each age range. PYP schools can and should meet the challenge of offering all learners the opportunity and the power to choose to act; to decide on their actions; and to reflect on these actions in order to make a difference in and to the world (see figure 10).

The problems inherent in advocating action are recognized, particularly the role of the teacher in creating opportunities that will lend themselves to the possibilities of student-initiated action. Action should be seen as a voluntary demonstration of a student's empowerment in the context of the expectations laid down in the programme. Voluntary action must remain precisely this if we truly believe in the values we advocate. Furthermore, we must remember that today's complex issues do not often suggest simple or self-evident solutions, and that inaction is also a legitimate choice; indeed, sometimes, inaction may be the best choice.

In the PYP, it is believed that every student, every year, has the right and should have the opportunity to be involved in such action. This action may be taken by an individual student or by a group of students working collaboratively. In order to make the action component of the curriculum as powerful as possible in terms of student learning, the PYP advocates a cycle of involvement that provides students with opportunities to engage in purposeful and beneficial action.

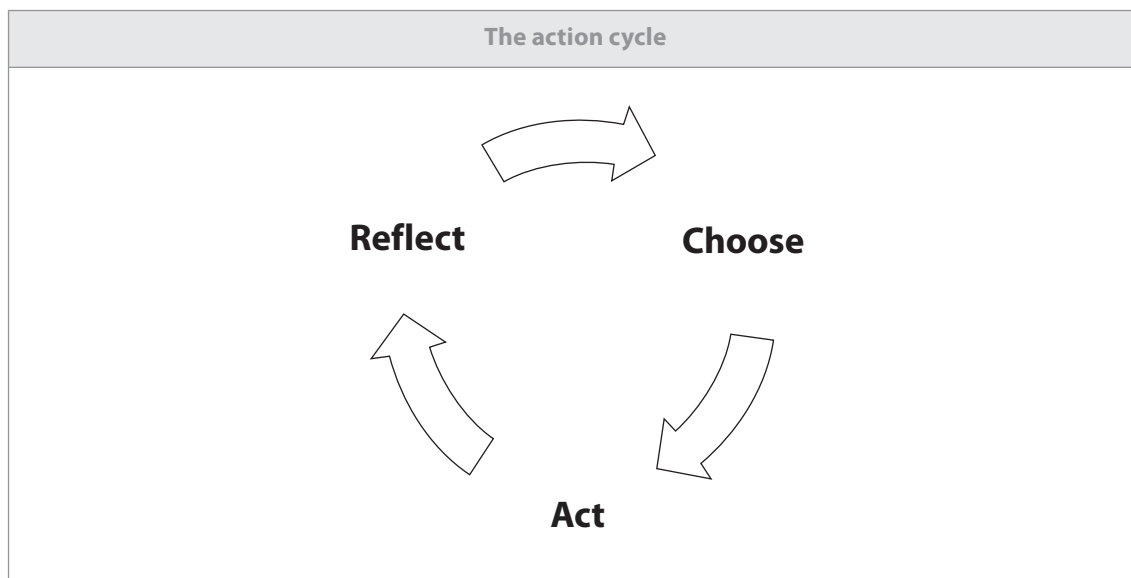


Figure 10

## Action as service

The action component of the PYP can involve service in the widest sense of the word: service to fellow students, and to the larger community, both in and outside the school. Through such service, students are able to grow both personally and socially, developing skills such as cooperation, problem solving, conflict resolution, and creative and critical thinking. Moreover, these actions are ways in which the students exhibit their commitment to the attributes of the learner profile and to the attitudes that we seek to engender within the PYP classroom. In fact, the actions that the students choose to take as a result of the learning may be considered the most significant **summative assessment** of the efficacy of the programme.

## Is it possible for students to identify appropriate action in which to engage?

In the PYP it is believed that not only is it possible for students to identify appropriate action, but also that teachers have a responsibility to enable them to choose their action carefully, to facilitate this action, and to encourage them to reflect on the action they undertake. This is viewed as an important part of students' active participation in their own learning.

Effective action does not need to be grandiose. On the contrary, it begins at the most immediate and basic level: with the self; within the family; within the classroom, the hallways and the playground. Even very young children can have strong feelings about fairness and justice, and teachers can facilitate positive expressions of these opinions. Effective action can be a demonstration of a sense of responsibility and respect for self, others and the environment.

## Guidelines for implementation

Effective action:

- should be modelled by the adults in the school community—the action in which schools may engage will be based on the needs of the school community and the local community
- should be voluntary and involve students in exercising their own initiative
- is best grounded in the students' concrete experiences
- is most beneficial to the students when they are able to witness the outcomes



- usually begins in a small way and arises from genuine concern and commitment
- should include anticipation of consequences, and accepting of responsibility
- may require appropriate adult support in order to facilitate students' efforts and to provide them with alternatives and choices.

The action of fund-raising, either modelled by adults or initiated by students, is common in schools. Although the outcome of the fund-raising is worthy, for students whose participation is limited to the giving of money, it may not require much in the way of personal commitment or reflection. It is intended that the person taking the action will grow from the experience, and that the process of taking action or not will contribute to each student establishing a personal set of values.

Action as a result of the learning may not be witnessed by the teacher and often happens beyond the classroom (see figure 11).

Action beyond the classroom	
A parent reports to a teacher that her 4-year-old child has taken action at home, after having been on a school excursion to a recycling station/sewage treatment plant/centre.	
<b>Parent</b>	On your trip did the children learn about water conservation?
<b>Teacher</b>	It was one component of our investigations. Why do you ask?
<b>Parent</b>	Because during the weekend I was starting the shower for my son. He ran out of the room and came back with a bucket, and put it in the shower. When I asked him what he was doing, he replied: "I'm catching the water that is not hot enough yet for my shower, so I can save it and give the garden a drink after my shower."
<b>Teacher</b>	That's really interesting. He is taking action as a result of what he learned. Please let me know if this continues and if you notice anything else.

Figure 11

## How best will we learn? The taught curriculum

### What are the connections between the written curriculum and classroom practice—the taught curriculum?

Those learning about the PYP sometimes ask “Is it a curriculum or an approach?” The answer is “both”. The PYP curriculum is defined broadly to include an approach to teaching and learning, in recognition of the fact that, in practice, the two are inextricably linked. The taught curriculum is the written curriculum in action.

The PYP developers have set out to strengthen these links by developing a curriculum in which classroom practice, the taught curriculum, is a direct reflection of the written curriculum. Therefore, in the written curriculum the essential elements of learning—knowledge, concepts, skills, attitudes and action—are identified. It is recognized that these elements are not completely separable—in the course of the learning process they blend. It is suggested that they are synthesized in three main ways:

- through the learner profile, which is supported by a curriculum framework based on the five essential elements
- through the exploration of conceptually based central ideas, linked to the transdisciplinary themes, which support and are supported by the other four essential elements
- through the collaborative planning process, which may involve input from students, that considers all three components of the PYP curriculum model—written, taught, assessed—in an iterative manner.

A culture of collaboration is required for the PYP to flourish within a school. This is most clearly reflected in the collaborative planning process that focuses on using the written curriculum to suggest central ideas that are themselves conceptually based. These central ideas may be selected to enhance each student’s understanding of issues of global significance, as expressed through the transdisciplinary themes. However, whether teaching goes on within or outside the programme of inquiry, it should be about students’ understanding of a central idea, wherever this is possible and reasonable. This defining of a central idea and the structuring of inquiry to support its understanding is one of the characteristics of the PYP planning process, and needs to be engaged with by all teachers in a PYP school. The teaching focuses on facilitating that inquiry in the classroom and beyond.

### Why is a commitment to inquiry and the construction of meaning important?

Since its inception, the PYP has been infused with a spirit of inquiry. The ongoing implementation of the PYP is framed by means of questions such as “What do we want the students to understand and be able to do?” In seeking to answer that question, there is a commitment to refining what is significant and relevant, and to quality rather than quantity. It is believed in the PYP that meaning and understanding are undermined by an emphasis on coverage; and that students will become more enduringly skillful when the learning is authentic and in context. The curriculum in a PYP school should emphasize the active construction of meaning so that students’ learning will be purposeful.

An extensive study of the literature, when combined with practical experience, has led the PYP to the position it now holds, which is one of commitment to structured, purposeful inquiry that engages students actively in their own learning. In the PYP it is believed that this is the way in which students learn best—that students should be invited to investigate significant issues by formulating their own questions, designing their own inquiries, assessing the various means available to support their inquiries, and proceeding with research, experimentation, observation and analysis that will help them in finding their own responses to the issues. The starting point is students' current understanding, and the goal is the active construction of meaning by building connections between that understanding and new information and experience, derived from the inquiry into new content.

Inquiry, as the leading pedagogical approach of the PYP, is recognized as allowing students to be actively involved in their own learning and to take responsibility for that learning. Inquiry allows each student's understanding of the world to develop in a manner and at a rate that is unique to that student.

It is recognized that there is a role for drill and practice in the classroom. Yet it is felt that teaching to the fullest extent possible about central ideas that are concept based leads to the most substantial and enduring learning.

As discussed earlier, the intention of the PYP is to support students' efforts to construct meaning from the world around them by drawing on their prior knowledge, by providing provocation through new experiences, and by providing time and opportunity for reflection and consolidation. This constructivist approach respects the students' developing ideas and understandings of the social and natural world; it continually stimulates students' revision and refinement of their models of how the world works. It implies a pedagogy that is significantly, but not necessarily completely, dependent on students' inquiry, where the planning incorporates a range of experiences that acknowledges the diversity of students' prior knowledge.

## What does inquiry look like?

Inquiry, interpreted in the broadest sense, is the process initiated by the students or the teacher that moves the students from their current level of understanding to a new and deeper level of understanding. This can mean:

- exploring, wondering and questioning
- experimenting and playing with possibilities
- making connections between previous learning and current learning
- making predictions and acting purposefully to see what happens
- collecting data and reporting findings
- clarifying existing ideas and reappraising perceptions of events
- deepening understanding through the application of a concept
- making and testing theories
- researching and seeking information
- taking and defending a position
- solving problems in a variety of ways.

Inquiry involves an active engagement with the environment in an effort to make sense of the world, and consequent reflection on the connections between the experiences encountered and the information gathered. Inquiry involves the synthesis, analysis and manipulation of knowledge, whether through play for early childhood students (3–5 years) or through more formally structured learning in the rest of the primary years.

In the PYP, the lively, animated process of inquiry appears differently within different age ranges. The developmental range evident in a group of 5 year olds can often be from 3 to 8 years. This demands that the teacher be a thoughtful participant in, and monitor of, the ongoing exploration and investigations that the students engage in or initiate. In particular, the teachers of the younger students need to be mindful of the role of the learning environment when presenting provocations to the students, for them to wonder at, and be curious about, and to stimulate purposeful play.

The PYP should be put into practice in developmentally appropriate ways. Practices are developmentally appropriate when the knowledge that may be constructed from them is related to the students' first-hand experience. This does not mean that young students do not acquire knowledge from, for example, stories, books and graphics/visuals. Nevertheless, the extent to which they acquire knowledge is dependent on whether young students can connect the new information to the knowledge they already possess and to the signs and symbols they already understand. It is important to recognize that students' learning may vary from developmental expectations.

Many different forms of inquiry are recognized, based on students' genuine curiosity and on their wanting and needing to know more about the world. It is most successful when students' questions and inquiries are genuine/honest and have real significance in moving them in a substantial way to new levels of knowledge and understanding. The most insightful inquiries, ones most likely to move the students' understanding further, come from existing knowledge. The structure of the learning environments, including the home, the classroom, the school and the community, and the behaviour modelled by others in that environment, particularly by the parent and the teacher, will lay down the knowledge foundation that will nurture meaningful participation and inquiry on the part of the students.

An explicit expectation of the PYP is that successful inquiry will lead to responsible action initiated by the students as a result of the learning process. This action may extend the students' learning, or it may have a wider social impact. Both inquiry and action will clearly look different within each age range and from one age range to the next.

## How do we plan for this kind of learning?

Most curriculum guides provide the basis for planning, usually in the form of a list of learning objectives. This list provides a document **from** which to plan. In the PYP, to support teachers who are implementing the programme, the link between the written, the taught and the assessed curriculums has been strengthened. Consequently, in the PYP a document **with** which to plan is provided. This document, the PYP planner (see figure 13), is:

- designed to be used collaboratively
- structured around a central idea and lines of inquiry.

The "bubble" planner (see figure 14), includes stage-by-stage guidelines to inform the use of the planner.

## How do we plan for assessment?

In the earliest stages of curriculum planning, good assessment practice requires that teachers ensure the **summative assessment** tasks are linked to the central idea of either the transdisciplinary unit of inquiry or of any teaching outside the programme of inquiry. This summative assessment should provide varied opportunities for the students to show their conceptual understanding. With these central ideas and assessment tasks in mind, activities and resources can be selected.

Teachers should develop ways to assess prior knowledge and skills in order to plan the inquiry. Teachers should also consider ways of assessing students' learning in the context of the lines of inquiry that support the inquiry into the central idea (**formative assessments**).

Continuous assessment provides insights into students' understanding, knowledge, skills and attitudes. It is also a means of exploring the learning styles and individual differences of the students in order to differentiate instruction.

When planning for assessment, teachers should think like assessors rather than activity designers, clearly setting the criteria that distinguish students' understanding of the central idea or learning objective. The teacher must constantly look for evidence that meets the criteria. Students should be involved whenever possible in the planning of an assessment task.

In planning for assessment, it is important to ask these questions:

- What is the function of the assessment?
- What central idea or learning objectives are being assessed?
- What evidence of the learning will be looked for?
- How can the evidence be collected?
- What experiences are being provided/supported to help the students be successful with the assessment?
- Will the assessment task demonstrate understanding?
- Is the assessment reliable enough to allow sound conclusions to be drawn?
- How will the assessment data be analysed and recorded?
- How and when will feedback be given?

## Using the planner

To ensure the coherence of the learning from the students' points of view, it is essential that all teachers in a PYP school see themselves as PYP teachers, and are fully committed to and engaged with the philosophy and practices of the programme. Within each school community, the approach to the implementation of the programme needs to be holistic, not fragmented by disciplinary teaching.

The version of the planner included in this edition of *Making the PYP happen: A curriculum framework for international primary education* has been developed for use by all teachers whose teaching is organized around the exploration of a central idea. This includes the classroom teachers who are usually with their students for most of the time, but also any single-subject teachers who usually spend less time with the students.

The PYP programme of inquiry is defined by the six transdisciplinary themes that are considered worthy of inquiry regardless of the age of the student. These are: *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*. Each theme is explored in a unit of inquiry that is planned and documented on a PYP planner.

Six units of inquiry—one for each transdisciplinary theme—should be addressed each year, except in the case of early childhood classrooms. The PYP defines early childhood as being from 3 to 5 years old. The 3–5 year olds are required to complete at least four units of inquiry each year. Two transdisciplinary themes are considered fundamentally relevant to all young students and must be included each year: these are *Who we are* and *How we express ourselves*.

Due to the nature of development and learning during early childhood (3–5 years), some of the units may be designed to be ongoing throughout the school year. In addition to these, any one unit may be revisited during the year, as shown in figure 12. However, it would not be appropriate to consolidate several units onto one planner; each unit must be documented on a separate planner.

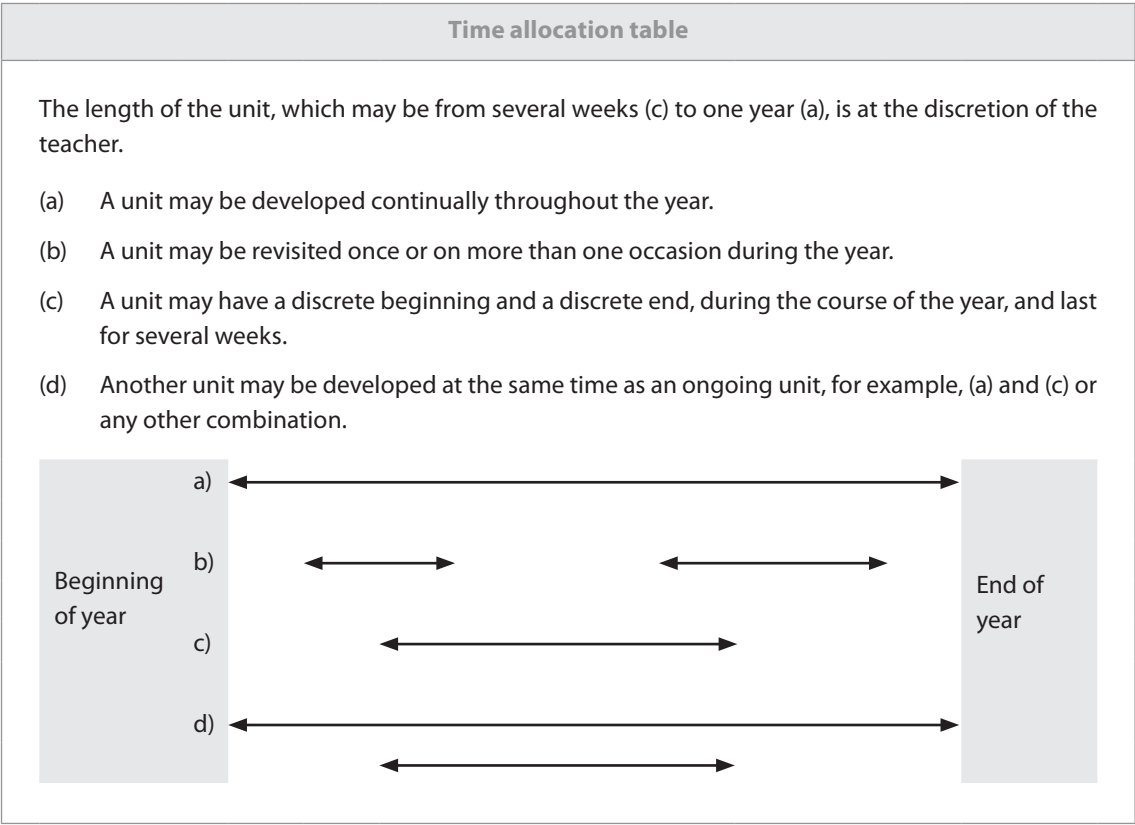


Figure 12

The teacher may exercise considerable freedom in structuring an appropriate time frame for the development of the units. It is important to remember and take into consideration that the responsibility for developing and teaching the units that address the required themes is not only that of the classroom teacher; it should be shared with all appropriate single-subject teachers.

# The PYP planner

1. What is our purpose?  
To inquire into the following:

- transdisciplinary theme
- central idea

Summative assessment task(s):

What are the possible ways of assessing students' understanding of the central idea? What evidence, including student-initiated actions, will we look for?

Class/grade:

Age group:

School:

School code:

Title:

Teacher(s):

Date:

Proposed duration: number of hours

over number of weeks

IBO

PYP planner

2. What do we want to learn?

What are the key concepts (form, function, causation, change, connection, perspective, responsibility, reflection) to be emphasized within this inquiry?

What lines of inquiry will define the scope of the inquiry into the central idea?

- 
- 
-

What teacher questions/provocations will drive these inquiries?

Figure 13

Planning the inquiry

<p>3. How might we know what we have learned? <i>This column should be used in conjunction with "How best might we learn?"</i></p> <p>What are the possible ways of assessing students' prior knowledge and skills? What evidence will we look for?</p> <p>What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for?</p>	<p>4. How best might we learn? What are the learning experiences suggested by the teacher and/or students to encourage the students to engage with the inquiries and address the driving questions?</p> <p>What opportunities will occur for transdisciplinary skills development and for the development of the attributes of the learner profile?</p>
<p>5. What resources need to be gathered? What people, places, audio-visual materials, related literature, music, art, computer software, etc., will be available?</p> <p>How will the classroom environment, local environment, and/or the community be used to facilitate the inquiry?</p>	

Figure 13 (continued)



**Reflecting on the inquiry**

<p>6. To what extent did we achieve our purpose? Assess the outcome of the inquiry by providing evidence of students' understanding of the central idea. The reflections of all teachers involved in the planning and teaching of the inquiry should be included.</p> <p>How you could improve on the assessment task(s) so that you would have a more accurate picture of each student's understanding of the central idea.</p> <p>What was the evidence that connections were made between the central idea and the transdisciplinary theme?</p>	<p>7. To what extent did we include the elements of the PYP? What were the learning experiences that enabled students to:</p> <ul style="list-style-type: none"><li>• develop an understanding of the concepts identified in "What do we want to learn?"</li><li>• demonstrate the learning and application of particular transdisciplinary skills?</li><li>• develop particular attributes of the learner profile and/or attitudes?</li></ul> <p>In each case, explain your selection.</p>
--	---

Figure 13 (continued)

<p><b>Reflecting on the inquiry</b></p> <p>8. What student-initiated inquiries arose from the learning? Record a range of student-initiated inquiries and student questions and highlight any that were incorporated into the teaching and learning.</p> <p><i>At this point teachers should go back to box 2 "What do we want to learn?" and highlight the teacher questions/provocations that were most effective in driving the inquiries.</i></p> <p>What student-initiated actions arose from the learning? Record student-initiated actions taken by individuals or groups showing their ability to reflect, to choose and to act.</p>	<p>9. Teacher notes</p>
--	-------------------------

Figure 13 (continued)

# The PYP bubble planner

Class/grade:

School:

Title:

Teacher(s):


Date:

Proposed duration: number of hours

Age group:

School code:

over number of weeks



1. What is our purpose?

To inquire into the following:

- transdisciplinary theme
- central idea

Summative assessment task(s):

What are the possible ways of assessing students' understanding of the central idea? What evidence, including student-initiated actions, will we look for?

Early in the collaborative planning process the definition of the **transdisciplinary theme** should be revisited to ensure that appropriate connections are made between it and the central idea.

The **central idea** should be written in one sentence that expresses concisely an enduring understanding. It should be substantial enough to generate in-depth inquiries, be concept-driven and promote the ability to think critically. It should challenge and extend students' prior knowledge, and should be a means of extending students' understanding of the **transdisciplinary theme**.

These questions should be addressed immediately after formulating the central idea. If there is no effective way that students can demonstrate their understanding of the central idea, the central idea will need to be revised so that students' understanding of it can be shown. The articulation between the central idea and the summative assessment task(s) needs to be resolved before further planning takes place.

Teachers need to be mindful of the diverse forms of evidence that may indicate understanding of the central idea. Student-initiated action may well be one form of this evidence. Teachers may find it helpful to anticipate the possible student-initiated actions that could take place.

2. What do we want to learn?

What are the key concepts (form, function, causation, change, connection, perspective, responsibility, reflection) to be emphasized within this inquiry?

After discussing the relevance of the key concepts to the central idea, no more than three of the key concepts should be selected to focus on in this inquiry. Related concepts derived from the key concepts could also be listed here.

What lines of inquiry will define the scope of the inquiry into the central idea?

- There should be three or four lines of inquiry that clarify the central idea and define the scope of the inquiry. These contributing aspects of the central idea extend the inquiry, focus student research, and deepen students' understanding. Connections should be made as appropriate between the lines of inquiry, as well as with the central idea.

What teacher questions/provocations will drive these inquiries?

The teachers have the responsibility of framing the inquiries at the beginning of the unit through the questions they ask and/or the provocations they provide (for example, rearranging the learning environment). This is also the opportunity for them to model explicitly the asking of open-ended, driving questions that will promote conceptual development.

As the collaborative planning process is ongoing, the planner will be revisited during the inquiry.

Figure 14

© International Baccalaureate Organization 2007

37

## Planning the inquiry

<p>3. How might we know what we have learned? <i>This column should be used in conjunction with "How best might we learn?"</i></p> <p>What are the possible ways of assessing students' prior knowledge and skills? What evidence will we look for?</p> <p>Students should be aware of the criteria used to assess their performance and regular feedback should describe the progress of students' learning and identify areas for growth. Students should be encouraged to be reflective learners through self- and peer-assessment.</p> <p>Evidence of each student's learning must be collected and presented in a manner that allows the student to reflect on the learning and describe his/her progress to others. Records should allow teachers and students to see progress in the development of knowledge, skills and understandings.</p> <p>Teachers should bear in mind that a well-designed assessment task becomes, in and of itself, a learning experience because it provides opportunities to reinforce or extend the learning.</p> <p>What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for?</p>	<p>4. How best might we learn? What are the learning experiences suggested by the teacher and/or students to encourage the students to engage with the inquiries and address the driving questions?</p> <p>Suggestions of activities from students may be in response to their own questions, as well as those posed by the teacher. Learning experiences should also be designed so that students will have the opportunity to develop an understanding of, and make connections between, the key concepts.</p> <p>Teachers should bear in mind that a well-designed learning experience will provide data on students' knowledge, skills and understanding, and is consequently a vehicle for formative or summative assessment.</p> <p>What opportunities will occur for transdisciplinary skills development and for the development of the attributes of the learner profile?</p> <p>When providing students with the opportunity to develop transdisciplinary skills, the attributes of the learner profile and/or the attitudes, teachers need to be mindful of the difference between opportunities that arise authentically from the learning, as opposed to explicitly targeted teaching opportunities.</p>
<p>5. What resources need to be gathered? What people, places, audio-visual materials, related literature, music, art, computer software, etc, will be available?</p> <p>How will the classroom environment, local environment, and/or the community be used to facilitate the inquiry?</p> <p>List available resources that you will use to support the inquiry. Discussions need to take place between the media centre staff, including the librarian and ICT support, and the classroom teachers to identify their roles both in the planning of the inquiry and during the extended inquiry itself. Whether or not the resources selected were adequate could be commented on in the teacher notes section.</p>	

Figure 14 (continued)

### Reflecting on the inquiry

#### 6. To what extent did we achieve our purpose?

Assess the outcome of the inquiry by providing evidence of students' understanding of the central idea. The reflections of all teachers involved in the planning and teaching of the inquiry should be included.

It is understood that evidence of student learning will be found in student work, teachers' anecdotal records and classroom collections such as portfolios. One or two examples should be described here or attached to the planner.

How you could improve on the assessment task(s) so that you would have a more accurate picture of each student's understanding of the central idea.

This reflection not only gives the teachers the opportunity to improve the assessments, but also to modify and strengthen the central idea.

What was the evidence that connections were made between the central idea and the transdisciplinary theme?

Teachers should include clear and detailed examples of classroom discussions, comments or student work that demonstrate connections made between the central idea and the transdisciplinary theme.

#### 7. To what extent did we include the elements of the PYP?

What were the learning experiences that enabled students to:

- develop an understanding of the concepts identified in "What do we want to learn?"
- demonstrate the learning and application of particular transdisciplinary skills?
- develop particular attributes of the learner profile and/or attitudes?

In each case, explain your selection.

Learning experiences that were particularly engaging, relevant, challenging and significant should be noted.

It is recognized that this planning tool cannot record all of the learning that takes place in a PYP classroom. Teachers should use their anecdotal records in order to more fully record the development of the attributes listed in the learner profile. This development is complemented and supported by the development of the PYP attitudes and teachers may also discuss them here.

Figure 14 (continued)

Reflecting on the inquiry

8. What student-initiated inquiries arose from the learning?  
Record a range of student-initiated inquiries and student questions and highlight any that were incorporated into the teaching and learning.

A range of student questions and wonderings should be recorded as evidence of the range of conceptual understanding in the group.  
Some student-initiated inquiries will be particularly influential in determining the nature of the inquiry and should be highlighted. These highlighted examples may influence and inform planning when the inquiry is next visited.

At this point teachers should go back to box 2 “What do we want to learn?” and highlight the teacher questions/provocations that were most effective in driving the inquiries.

What student-initiated actions arose from the learning?  
Record student-initiated actions taken by individuals or groups showing their ability to reflect, to choose and to act.

As the action component may develop spontaneously during the course of the inquiry, or even after the inquiry has been completed, this section may be revisited both during and after the inquiry.  
Not every inquiry will necessarily have a student-initiated action component.

9. Teacher notes

Further reflections and connections to other central ideas, transdisciplinary themes or single-subject areas should be included where appropriate.

Figure 14 (continued)

## Evaluating a written planner for an inquiry

After the planning process is completed, teachers should reflect on how effective their planning is. Questions to be considered for evaluating the quality of the planning documented on the planner are as follows.

### Purpose

- Is the central idea clearly stated?
- Have appropriate connections been made between the central idea and the transdisciplinary theme?
- Do the teacher questions and provocations reflect the purpose?
- Are the teacher questions clear, open-ended and precise?
- Are the lines of inquiry appropriate to the development level and interests of the students?
- Is there a direct link between the concept-based questions and the activities?
- Does the inquiry provide opportunities for:
  - exploring significant knowledge
  - understanding key concepts and related concepts
  - acquiring and applying relevant skills
  - developing responsible attitudes
  - reflection and taking action?
- Do the lines of inquiry and learning experiences promote international-mindedness?

### Learning experiences

- Do the learning experiences reflect a variety of appropriate teaching and learning strategies?
- Does the availability and range of resources support inquiry for all students?
- Will the students be actively engaged, and challenged?
- Is there room for student-initiated inquiry?

### Assessment

- Does the summative assessment link to the central idea?
- Do the assessment strategies and tools allow for individual differences?
- Are the criteria for success in this inquiry clearly identified for both students and teachers?
- Does the assessment allow the teacher to give feedback to the students and parents?

## Good PYP practice

A PYP classroom can only be fully effective in the context of a PYP school. In a PYP school, all constituents are committed to learning and to developing international-mindedness. Adults and students are encouraged to identify problems and seek solutions in the pursuit of continuous improvement towards common goals. A PYP school is infused with a sense of purpose and a spirit of inquiry. Within this setting, each classroom operates as a microcosm of the larger institution.

The classroom is a place of variety and balance. Balance is seen in the attention given both to the pursuit of understanding and to the acquisition of knowledge and essential skills. Variety is there in the range of teaching and assessment strategies and resources used by teachers to meet the needs of each student; and also in the levels of performance the teacher expects to see within the class, and even from one student over time.

Students are actively engaged in planning and assessing their own learning. They are supportive of each other and learning to establish their personal set of beliefs and values. They recognize both their right to an education and their role in achieving that. They are empowered to do their best, for themselves, and in order to contribute to the learning and well-being of others.

A PYP classroom is a lively place, characterized by collaborative and purposeful activity. It is also a reflective place, where thoughtful consideration of issues, problems and successes is valued highly.

Above all, and in summary, a PYP classroom is an intelligent place. It is a place in which the easy option is seldom sought and where the expectations are high. It is an environment in which learning knows no limits.

## The role of the adult

The teacher must be familiar with child development and learning, be responsive to the needs and interests of the individual student, and be aware of the cultural and social contexts in which the student lives and learns. The role of the teacher is to facilitate connections between the student's prior knowledge and the knowledge available through new experiences. This is best done with the support of the parents, because it is the student's environment—the home, the school and the community—that will shape the student's cognitive experience.

The teacher needs to provide a secure learning environment in which the individual student is valued and respected, so that the relationships students establish with each other and with adults, which are of central importance to development and learning, will flourish. The student is best served when the relationships between the teacher and the parent, and between the school and the home, are reciprocal and supportive. In a PYP classroom, parents are welcomed as partners, with a clear role to play in supporting the school and their own children. They are informed and involved.

The range of development and learning demonstrated by each member of a group of students will inform which practices the teacher will need to implement to meet the needs of both the group and the individual. The PYP suggests that the teacher's role in this process is to create an educational environment that encourages students to take responsibility, to the greatest possible extent, for their own learning. This means that resources must be provided for each student to become involved in self-initiated inquiry, in a manner appropriate to each student's development and modalities of learning.

The PYP classroom is a dynamic learning environment, with the students moving from group work to individual work in response to their needs and the needs of the inquiries to which they have committed. The students will change roles, working as a leader, a partner, or a member of a larger group.

In the PYP classroom, the teacher facilitates the process of students becoming initiators rather than followers by creating opportunities for and supporting student-initiated inquiries; by asking carefully thought-out, open-ended questions; and by encouraging students to ask questions of each other as well as of the teacher. It goes without saying that the teacher must also value and model inquiry.



## Structuring the environment for students

The school environment needs to have a range of clearly defined areas to encourage inquiry, investigation, exploration and play, both in and out of doors. These may include spaces for reading, writing, art, construction, imaginative play and science, with a wide variety of appropriate resources in each. Particularly for young students, interactions in and with these spaces stimulate them to become active learners. They need extended periods of time and as much space as possible to explore, investigate and play with a variety of materials in order to learn about themselves, other people and the world around them. Teachers should structure dynamic learning environments to provide ongoing opportunities for students to develop planned and spontaneous inquiries by:

- making choices and decisions
- using materials in flexible and imaginative ways
- initiating inquiry and asking questions
- working collaboratively with others
- sustaining their interests and extending their knowledge
- developing understanding.

## The role of ICT

In the PYP, the ever-increasing impact of information and communication technologies (ICT) on teaching and learning is recognized. It is recommended that all staff be trained to learn how to use any technologies provided for them by the school, and that the use of the available technologies be integrated into student inquiries.

Many students will bring previous experience and knowledge that can be drawn upon to enhance the learning of others, including that of the teacher. In fact, it is in this area that a PYP classroom most often resembles a community of learners.

ICT provides opportunities for the enhancement of learning, and may significantly support students in their inquiries, and in developing their conceptual understanding. It is best considered as a tool for learning, albeit with its own set of skills, as opposed to an additional subject area. ICT skills should be developed and learned in order to support the needs of individual learners in their inquiries.

The use of ICT:

- can document the learning, making it available to all parties
- can provide opportunities for rapid feedback and reflection
- can provide opportunities to enhance authentic learning
- can provide access to a broad range of sources of information
- can provide students with a range of tools to store, organize and present their learning
- encourages and allows for communication with a wide-ranging audience.

A PYP school community should collaboratively identify and agree on the need for, and aims of, the use of ICT. ICT tools should be used critically, with integrity, and there should be specific attention given to the validity and reliability of information gained through their use.

## How will we know what we have learned? The assessed curriculum

### What is the PYP perspective on assessment?

Assessment is integral to all teaching and learning. It is central to the PYP goal of thoughtfully and effectively guiding students through the five essential elements of learning: the acquisition of knowledge, the understanding of concepts, the mastering of skills, the development of attitudes and the decision to take action. The prime objective of assessment in the PYP is to provide feedback on the learning process. All PYP schools are expected to develop assessment procedures and methods of reporting that reflect the philosophy and objectives of the programme.

Assessment involves the gathering and analysis of information about student performance and is designed to inform practice. It identifies what students know, understand, can do, and feel at different stages in the learning process. Students and teachers should be actively engaged in assessing the students' progress as part of the development of their wider critical-thinking and self-assessment skills.

Teachers need to be mindful of the particular learning outcomes on which they intend to report, prior to selecting or designing the method of assessment. They need to employ techniques for assessing students' work that take into account the diverse, complicated and sophisticated ways that individual students use to understand experience. Additionally, the PYP stresses the importance of both student and teacher self-assessment and reflection.

Everyone concerned with assessment, including students, teachers, parents and administrators, should have a clear understanding of the reason for the assessment, what is being assessed, the criteria for success, and the method by which the assessment is made. The entire school community should also be concerned with evaluating the efficacy of the programme.

Programme **evaluation** contributes to the continuing improvement of the overall programme. Student performance is assessed in accordance with the programme standards and practices, the overall learning outcomes and the subject-specific overall expectations. It also provides information used to inform members of the school community and others of the success of the programme.

The PYP approach to assessment recognizes the importance of assessing the process of inquiry as well as the product(s) of inquiry, and aims to integrate and support both. The teacher is expected to record the detail of inquiries initiated by students in order to look for an increase in the substance and depth of the inquiry. The teacher needs to consider:

- if the nature of students' inquiry develops over time—if they are asking questions of more depth, that are likely to enhance their learning substantially
- if students are becoming aware that real problems require solutions based on the integration of knowledge that spans and connects many areas
- if students are demonstrating mastery of skills
- if students are accumulating a comprehensive knowledge base and can apply their understanding to further their inquiries successfully
- if students are demonstrating both independence and an ability to work collaboratively.

The assessment component in the school's curriculum can itself be subdivided into three closely related areas.

- **Assessing**—how we discover what the students know and have learned.
- **Recording**—how we choose to collect and analyse data.
- **Reporting**—how we choose to communicate information.

## Assessing: how do we discover what students have learned?

Student learning is promoted through planning and refining the teaching and learning process to meet individual or group needs. Assessing the students' prior knowledge and experience as well as monitoring their achievement during the teaching period will enable teachers to plan and refine their teaching accordingly. Teachers should bear in mind that a well-designed learning experience will provide data on students' knowledge, skills and conceptual understanding, and is consequently a vehicle for summative or formative assessment.

**Summative assessment** aims to give teachers and students a clear insight into students' understanding. Summative assessment is the culmination of the teaching and learning process, and gives the students opportunities to demonstrate what has been learned. It can assess several elements simultaneously: it informs and improves student learning and the teaching process; it measures understanding of the central idea, and prompts students towards action.

**Formative assessment** provides information that is used in order to plan the next stage in learning. It is interwoven with learning, and helps teachers and students to find out what the students already know and can do. Formative assessment and teaching are directly linked and function purposefully together. Formative assessment aims to promote learning by giving regular and frequent feedback. This helps learners to improve knowledge and understanding, to foster enthusiasm for learning, to engage in thoughtful reflection, to develop the capacity for self-assessment, and to recognize the criteria for success. There is evidence that increased use of formative assessment particularly helps those students who are low achievers to make significant improvements in their understanding.

Assessment in the classroom will include:

- using representative examples of students' work or performance to provide information about student learning
- collecting evidence of students' understanding and thinking
- documenting learning processes of groups and individuals
- engaging students in reflecting on their learning
- students assessing work produced by themselves and by others
- developing clear rubrics
- identifying exemplar student work
- keeping records of test/task results.

After any assessment is complete, it is important to ask further questions such as the following.

- Have the tasks provided ample information to allow a judgment to be made about whether the purposes or objectives have been met?
- What does the students' performance reveal about their level of understanding?
- Have any unexpected results occurred?
- What changes should be made in the assessment procedure?
- How should the teaching and learning process be modified as a result of the assessment?

## Effective assessments

The following criteria for effective assessments are applicable to both formative and summative assessment.

Effective assessments allow students to:

- share their learning and understanding with others
- demonstrate a range of knowledge, conceptual understanding and skills
- use a variety of learning styles, multiple intelligences and abilities to express their understanding
- know and understand in advance the criteria for producing a quality product or performance
- participate in reflection, self- and peer-assessment
- base their learning on real-life experiences that can lead to further inquiries
- express different points of view and interpretations
- analyse their learning and understand what needs to be improved.

Effective assessments allow teachers to:

- inform every stage of the teaching and learning process
- plan in response to student and teacher inquiries
- develop criteria for producing a quality product or performance
- gather evidence from which sound conclusions can be drawn
- provide evidence that can be effectively reported and understood by the whole school community
- collaboratively review and reflect on student performance and progress
- take into account a variety of learning styles, multiple intelligences and abilities including different cultural contexts
- use scoring that is both **analytical** (separate scores for different aspects of the work) and **holistic** (single scores).

Effective assessments allow parents to:

- see evidence of student learning and development
- develop an understanding of the student's progress
- provide opportunities to support and celebrate student learning.

## Further considerations for assessing the learning of young students

The assessment of the development and learning of young students is an essential component of the curriculum, and helps to inform continued development, learning and teaching. Students should be observed in a variety of situations, and a wide range of assessment strategies should be implemented. The teacher observes the young student in order to:

- build up a clear picture of the student and his or her interests
- identify what and how the student is thinking and learning
- assess the effectiveness of the environment on the student's learning
- extend the student's learning.

When observing, the teacher should record what the students say. By listening carefully to the dialogue between students, especially in dramatic play, the teacher can learn about their current interests, knowledge base, level of involvement and social skills. The teacher should share these observations with the students, with colleagues and with parents to know better the inner world of the student, analyse the interactions within a group, discover the student's strengths and difficulties, and reflect on the effectiveness of the practices used to implement the programme of inquiry and other classroom experiences.

It is important to identify the needs of each student and to view learning as a continuum, with each student achieving developmental milestones in different but relevant ways. Through listening and observing, areas of learning that the students particularly enjoy can be identified, and stimulating experiences can be planned to consolidate or extend the learning further.

## Recording: how do we collect and analyse the data?

Assessment strategies and tools form the basis of a comprehensive approach to assessment and represent the school's answer to the question "How will we know what we have learned?"

The strategies are the methods or approaches that teachers use when gathering information about a student's learning. Teachers record this information using a variety of tools, which are the instruments used to collect data.

When choosing appropriate strategies, it is important to take into consideration which tools are most applicable and relevant to that strategy. This helps to ensure that an effective assessment of the learning experience takes place. A variety of strategies and tools should be used (see figure 15).

Assessment strategies and tools					
Assessment tools \ Assessment strategies	Rubrics	Exemplars	Checklists	Anecdotal records	Continuums
Observations	✓		✓	✓	✓
Performance assessments	✓	✓		✓	✓
Process-focused assessments	✓		✓	✓	✓
Selected responses		✓	✓		✓
Open-ended tasks	✓	✓		✓	✓

Figure 15

## Strategies

The strategies in figure 16 have been identified as central to the assessment process. They cover a broad range of approaches, from the more subjective and intuitive to the more objective and scientific. It is essential that they be seen as a package since they have been selected in order to provide a range of approaches and therefore to provide a balanced view of the student.

Assessment strategies	
<b>Observations</b>	All students are observed often and regularly, with the teacher taking a focus varying from wide angle (for example, focusing on the whole class) to close up (for example, focusing on one student or one activity), and from non-participant (observing from without) to participant (observing from within).
<b>Performance assessments</b>	The assessment of goal-directed tasks with established criteria. They provide authentic and significant challenges and problems. In these tasks, there are numerous approaches to the problem and rarely only one correct response. They are usually multimodal and require the use of many skills. Audio, video and narrative records are often useful for this kind of assessment.

Figure 16

Assessment strategies	
<b>Process-focused assessments</b>	Students are observed often and regularly, and the observations are recorded by noting the typical as well as non-typical behaviours, collecting multiple observations to enhance reliability, and synthesizing evidence from different contexts to increase validity. A system of note taking and record keeping is created that minimizes writing and recording time. Checklists, inventories and narrative descriptions (such as learning logs) are common methods of collecting observations.
<b>Selected responses</b>	Single occasion, one-dimensional exercises. Tests and quizzes are the most familiar examples of this form of assessment.
<b>Open-ended tasks</b>	Situations in which students are presented with a stimulus and asked to communicate an original response. The answer might be a brief written answer, a drawing, a diagram or a solution. The work, with the assessment criteria attached, could be included in a portfolio.

Figure 16 (continued)

## Tools

The assessment strategies listed in figure 16 may be put into practice using the assessment tools in figure 17.

Assessment tools	
<b>Rubrics</b>	An established set of criteria for rating students in all areas. The descriptors tell the assessor what characteristics or signs to look for in students' work and then how to rate that work on a predetermined scale. Rubrics can be developed by students as well as by teachers.
<b>Exemplars</b>	Samples of students' work that serve as concrete standards against which other samples are judged. Generally there is one benchmark for each achievement level in a scoring rubric. Each school is encouraged to set benchmarks that are appropriate and usable within their particular school context.
<b>Checklists</b>	These are lists of information, data, attributes or elements that should be present. A mark scheme is a type of checklist.
<b>Anecdotal records</b>	Anecdotal records are brief written notes based on observations of students. "Learning stories" are focused, extended observations that can be analysed later. These records need to be systematically compiled and organized.
<b>Continuums</b>	These are visual representations of developmental stages of learning. They show a progression of achievement or identify where a student is in a process.

Figure 17

These assessment tools may be used in conjunction with other forms of assessment, such as standardized tests, in order to assess both student performance and the efficacy of the programme.

## The IBO position on standardized achievement tests

While the IBO does not administer or encourage the use of standardized achievement tests, it recognizes that there may be a local, state or national requirement concerning the use of such tests for many IB World Schools. Some other IB World Schools, not subject to these requirements, do choose to use commercially available tests in order to measure their students' performance over time, in areas defined by the test but not directly linked to the learning defined in the academic programme. When standardized achievement tests are an option, administrators and teachers should carefully consider:

- the relevance of the test to the cohort of students within the school
- the relationship between what is being tested and the school's programme
- the impact of testing on teaching and learning
- the usability of the data produced.

## Documentation

The documentation of the evidence of student learning is an assessment strategy relevant to all students throughout the PYP, but may be particularly significant in the early years (3–5 years). Teachers use a range of methods to document student learning as a means of assessing student understanding. This may include, but is not limited to, videos, audio, photographs and graphic representations.

Teachers may also use written records of student conversations, comments, explanations and hypotheses as well as annotated pieces of student work that may form part of a student's portfolio.

## Portfolios

Schools have a responsibility to show evidence of student learning. As an example, portfolios are one method of collecting and storing information that can be used to document and assess student progress and achievement.

A portfolio is a record of students' involvement in learning which is designed to demonstrate success, growth, higher-order thinking, creativity, assessment strategies and reflection. A portfolio is a celebration of an active mind at work. It provides a picture of each student's progress and development over a period of time both as individual and group learners. It enables students to reflect with teachers, parents and peers in order to identify their strengths and growth as well as areas for improvement, and then to set individual goals and establish teaching and learning plans.

Evidence of learning in a portfolio should be from a range of experiences and curriculum areas. The portfolio is used to show the development of knowledge, conceptual understanding, transdisciplinary skills, attitudes and the attributes of the learner profile over a period of time. It may also be used to document student action. Portfolio entries should document both the process of learning and the product, including images and evidence of students in the process of constructing meaning. It can be used as a tool for assessment and reporting purposes for students, parents, teachers and administrators.

## How does it work?

Schools using portfolios will need to develop agreements for their use. Things to consider are:

- the criteria for selecting pieces of work
- who will select the pieces of work
- what will accompany the selected pieces of work (for example, self-assessment, reflections, assessment tools, teacher comments)
- how to establish what is to be included and what will be removed



- when and how portfolios are to be used (for reporting purposes, student-led conferences, parent-teacher interviews, report writing)
- the format the portfolios will take (for example, electronic, binder, folder)
- where the portfolios will be housed
- who has access to the portfolios
- who the portfolio ultimately belongs to
- how the portfolios will move with the students.

## Reporting: how do we choose to communicate information about assessment?

Reporting on assessment is about communicating what students know, understand and can do. It describes the progress of the students' learning, identifies areas for growth, and contributes to the efficacy of the programme. Assessment without feedback is merely judgment; feedback is the component of assessment that lets us interpret the judgment and improve our work. Reporting is perhaps the most public aspect of a school's assessment policy, and as such needs careful consideration in order to provide clear information that is useful to students and parents. Reporting may take many forms including conferences and written reports.

Effective reporting should:

- involve parents, students and teachers as partners
- reflect what the school community values
- be comprehensive, honest, fair and credible
- be clear and understandable to all parties
- allow teachers to incorporate what they learn during the reporting process into their future teaching and assessment practice.

Schools are required to report on each student's development according to the attributes of the learner profile. However, this feedback does not need to be included on a report card, and teachers do not need to report on each attribute at the end of every reporting period. It is not appropriate to grade or score the attributes of the learner profile.

Opportunities should be provided for students to consider their progress in relation to the attributes listed in the IB learner profile in the context of student learning. Observations and anecdotal records of their own performance could be included in each student's portfolio of selected work. The student could also contribute to reporting to parents, through the report card and/or student-led conferences.

The issue is that the parents need to know about the learner profile and that the school community attaches the utmost importance to it, such that it influences the valued practices and cultural norms within the school. This is also an example of the process being more important than the product, and of the student's role in the process being strengthened and made clear.

## Conferences

The purpose of conferences is to share information between teachers, students and parents. A school should determine the function of conferences in order to develop their structure, and this might include goal setting. These conferences may take a formal or informal structure.

The following structures may be used.

### **Teacher–student**

These are designed to give students feedback so they can reflect on their work and further refine and develop their skills. It is important that these individual conferences occur frequently in order to support and encourage the student's learning and teacher planning.

### **Teacher–parent(s)**

These are designed to give the parents information about the student's progress development and needs, and about the school's programme. Teachers should take this opportunity to gather background information, to answer the parents' questions, to address their concerns, and to help define their role in the learning process. The parents should take the opportunity to provide the teacher with the cultural context of the student's learning.

### **Student-led**

Student-led conferences involve the student and the parent. The students are responsible for leading the conference, and also take responsibility for their learning by sharing the process with their parents. It may involve students demonstrating their understanding through a variety of different learning situations. There may be several conferences taking place simultaneously.

The conference will involve the students discussing and reflecting upon samples of work that they have previously chosen to share with their parents. These samples have been previously selected with guidance and support from the teacher, and could be from the student's portfolio. The student identifies strengths and areas for improvement. It enables parents to gain a clear insight into the kind of work their child is doing and offers an opportunity for them to discuss it with their child. The conferences must be carefully prepared, and time must be set aside for the students to practise their presentations. The format of this conference will depend on the age of the student and all of the participants must understand the format and their roles prior to the conference.

### **Three-way**

Three-way conferences involve the student, parents and teacher. Students discuss their learning and understanding with their parents and teacher, who are responsible for supporting the student through this process. Students are responsible for reflecting upon work samples they have chosen to share, that have been previously selected with guidance and support from the teacher and could be from the student's portfolio. The student, parents and the teacher collaborate to establish and identify the student's strengths and areas for improvement. This may lead to the setting of new goals, with all determining how they can support the achievement of the goals. The teacher is an integral part of the process and takes notes of the discussion. These notes may then be used in the written report. All of the participants must understand the format and their roles prior to the conference.

## **The written report**

Written reports are seen as a summative record for students, parents and the school itself of a student's progress. Nonetheless, the formative potential of an effective reporting procedure should not be overlooked. Reports that clearly indicate areas of strengths, areas for improvement, and where students are involved in providing input (through self-assessment), are helpful aids to a student's development.

The reporting system and procedures of a PYP school should reinforce the underlying values of the programme. Many schools will be subject to local requirements that include standardized reports or formats that may not reflect PYP objectives and assessment criteria. In such cases, schools are expected to devise additional forms of reporting that take into account the assessment model of the PYP and provide a clear indication of the student's progress with reference to the learner profile.

There are no specific formats preferred by the IBO for reports, but the following points may prove useful in formulating a reporting system.

1. The learner profile is addressed.
2. The transdisciplinary units and the subject-specific teaching are included.
3. All teachers involved in the student's progress have an opportunity to comment.
4. All the essential elements of the programme are included.

Examples of schools' report card templates can be found on the OCC.

## The exhibition

In the final year of the PYP, students participate in a culminating project, the PYP exhibition. This requires that each student demonstrates engagement with the five essential elements of the programme: knowledge, concepts, skills, attitudes and action. It is a transdisciplinary inquiry conducted in the spirit of personal and shared responsibility, as well as a summative assessment activity that is a celebration as students move from the PYP into the middle years of schooling. For further information and guidance on the exhibition, refer to *PYP exhibition guidelines* (2004).

The exhibition represents a significant event in the life of a PYP school and student, synthesizing the essential elements of the PYP, and sharing them with the whole school community. It is an opportunity for students to exhibit the attributes of the learner profile that have been developing throughout their engagement with the PYP.

In the students' final year of the PYP, which occurs in some schools at 10–11 years old and in others at 11–12 years old, there are five units of inquiry and the exhibition. The exhibition unit takes place under any transdisciplinary theme at the discretion of the school. Students are required to engage in a collaborative, transdisciplinary inquiry process that involves them in identifying, investigating and offering solutions to real-life issues or problems. The central idea selected must be of sufficient scope and significance to warrant a detailed investigation by all students.

The PYP exhibition has a number of key purposes including the following.

- For students to engage in an in-depth, collaborative inquiry
- To provide students with an opportunity to demonstrate independence and responsibility for their own learning
- To provide students with an opportunity to explore multiple perspectives
- For students to synthesize and apply their learning of previous years, and to reflect on their journey through the PYP
- To provide an authentic process for assessing student understanding
- To demonstrate how students can take action as a result of their learning
- To unite the students, teachers, parents and other members of the school community in a collaborative experience that incorporates the essential elements of the PYP
- To celebrate the transition of learners from primary to middle/secondary education

As the culminating PYP experience, it is required that the exhibition reflects all the major features of the programme. Therefore, it must include regular and carefully planned assessment.

This assessment should take two forms: firstly, ongoing assessment of each individual student's contribution to and understanding of the exhibition; secondly, a summative assessment and reflection on the event itself.

Assessment of the exhibition takes place within the school. It should take place throughout the whole process of the exhibition and should be rigorous. The IBO seeks to ensure the integrity of the PYP without formally monitoring internal assessment or conducting external examinations. Schools may find it helpful to refer to the exhibition rubric in the *PYP exhibition guidelines* (2004), which is based on standard D2 of the *IBO Programme standards and practices* (2005), as a guide to assessing their exhibition.

Teachers will find samples of how schools have engaged in the exhibition, together with further guidance for the exhibition, on the OCC.

## A school's assessment policy

There is a written assessment policy in place that is available to all sections of the school community.

*Programme standards and practices: C4.1, IBO (2005)*

An assessment policy reflects the school's philosophy and position on assessment. Developing an assessment policy is often the catalyst for schools to focus on their philosophy for assessment and to achieve a common understanding of their aims and objectives.

An assessment policy is a written document that aims to clarify teachers' understanding of the whole assessment process within their school setting. It is not a static document but one that is constantly evolving to reflect the assessment needs of the school. Collaborative reflection is a key component of developing an assessment policy, and must involve both teaching staff and administrators.

Once an assessment policy has been developed and agreed upon, it will apply across the whole school. A clear assessment policy needs to be established in the school and communicated to students and parents. It will include the following.

- Purpose for assessment (What and why do we assess?)
- Principles of assessment (What are the characteristics of effective assessments?)
- Assessment practice (How do we assess?)

When creating an assessment policy, schools need to keep in mind the overall value of the collaborative process that the school community will go through. The most important thing is the collaboration that must take place within a school in order to create an assessment policy. Although producing a written document is the intended outcome, it is the collaborative nature of the process and the associated discussions that are of most value. By involving those with a vested interest, the assessment policy then truly reflects the school's philosophy. A system should also be put in place to allow regular reviews of the assessment policy.

The following questions can be used to assist a school to establish an assessment policy.

- What is the school's philosophy of assessment?
- How is the school's philosophy of assessment aligned to its mission statement?
- What practices will be agreed upon in order to fulfill this philosophy?
- What are the purposes of assessment for all the components of the school community (students, teachers, parents, administrators)?

Schools will find it helpful to develop agreed assessment practices as a part of their assessment policy. These are practices that are put into place within the school that address how the school assesses, records and reports student progress.

The following questions can be used to help a school establish agreements on assessment.

- How should we structure assessment?
- How often should we assess?
- What do we assess?
- Who is responsible for assessment and how?
- How should assessment information be recorded?
- How should assessment information be analysed and reported?
- How will assessment information be reported to students and parents?
- Who will have access to assessment information and where will it be located?
- How often will we review our assessment practices?
- Are there any mandatory requirements that must be satisfied?

## Understanding the PYP from analysis to synthesis

The preceding sections of this document present an analysis of the various components of the PYP approach to curriculum. However, in order to understand the PYP fully it is important to see this approach as a synthesis of these components. This synthesis operates at several levels.

A synthesis of the:

**Essential elements**

Teachers and students use powerful concepts to generate key questions with which to conduct inquiry into significant transdisciplinary content. In the course of this inquiry, students acquire essential knowledge and skills and engage in responsible action. They do so in a climate that fosters positive attitudes.

**Written, taught and assessed curriculums**

Using the written curriculum as the primary resource, teachers and students plan a process of structured inquiry involving a range of classroom activities—the taught curriculum. The assessed curriculum that provides data on the learning is integral to these activities, and focuses both on the quality of the learning process and on the outcomes of the learning.

**Coherent transdisciplinary learning**

At the heart of the PYP curriculum are the essential elements: knowledge, concepts, skills, attitudes and actions. These elements transcend subject-area boundaries and forge the curriculum into a coherent transdisciplinary whole that is engaging, relevant, challenging and significant.

**School as a community of learners**

In the PYP, students, parents and teachers are seen as partners united by a spirit of inquiry and a commitment to continuous improvement, working towards the common goal of providing every student with an education of the highest quality aimed at promoting international-mindedness.

## The synthesis of the essential elements

The components of the PYP curriculum framework should be thought of, and be experienced as, contributing to an articulated whole. The PYP planner is an instrument for ensuring the synthesis of the essential elements in the planning, teaching and learning processes, while the learning outcomes described in the IB learner profile are a manifestation of that synthesis.

### Synthesizing through the planner

In the PYP, most of the teaching and learning centres around the design of transdisciplinary units of inquiry. Each unit of inquiry is planned and recorded on the PYP planner. Each of these units:

- stands alone as an engaging, challenging, relevant and significant experience
- contributes to a coherent, school-wide programme of inquiry that is framed in terms of transdisciplinary themes of global significance

- draws together elements of different subject areas to support the exploration of a central idea
- is planned by teams of teachers working in collaboration, guided by a set of questions that are documented on the PYP planner
- is driven by a set of key questions that is conceptually based
- involves students in a range of learning experiences planned in response to the lines of inquiry
- builds on the prior knowledge of the students
- is constructed and conducted in such a way as to promote positive attitudes and provide opportunities for socially responsible action
- requires students to reflect on, and take responsibility for, their learning.

Through the units of inquiry, the essential elements are synthesized into a meaningful whole, a coherent approach to teaching and learning. Teachers and students generate questions and inquiries that have a conceptual base and are relevant to the central idea of the unit. Classroom experiences are planned as a direct response to these questions and inquiries. The classroom becomes a centre of structured inquiry through which students acquire and practise skills, and build new knowledge. They do so in a climate that fosters positive attitudes, and offers opportunities for responsible action. Assessment of student learning focuses on the quality of the students' understanding of the central idea and the breadth and depth of their responses to the lines of inquiry.

It is important to note that the programme of inquiry does not necessarily constitute a school's whole programme. Well-planned inquiries provide an ideal context for learning both within and outside the programme of inquiry. It is also recognized that the subject areas have an integrity and essence of their own. Teaching about and through the subject areas is advocated when it enhances the transdisciplinary learning defined in the PYP, but not when the integration results in teaching and learning that is contrived and superficial.

## **The outcome of the synthesis as represented in the IB learner profile**

The beliefs and values of the PYP are represented in the form of the IB learner profile. This profile lists, as attributes, the learning outcomes of the curriculum and focuses attention on the fact that student learning is the purpose of schools.

The IB learner profile also represents a synthesis of the essential elements of the PYP. Throughout the primary years, the students engage in structured inquiry that synthesizes knowledge, concepts, skills, attitudes and action. In doing so, they develop the attributes described in the learner profile. This profile provides powerful goals that serve learning across all areas of the curriculum.

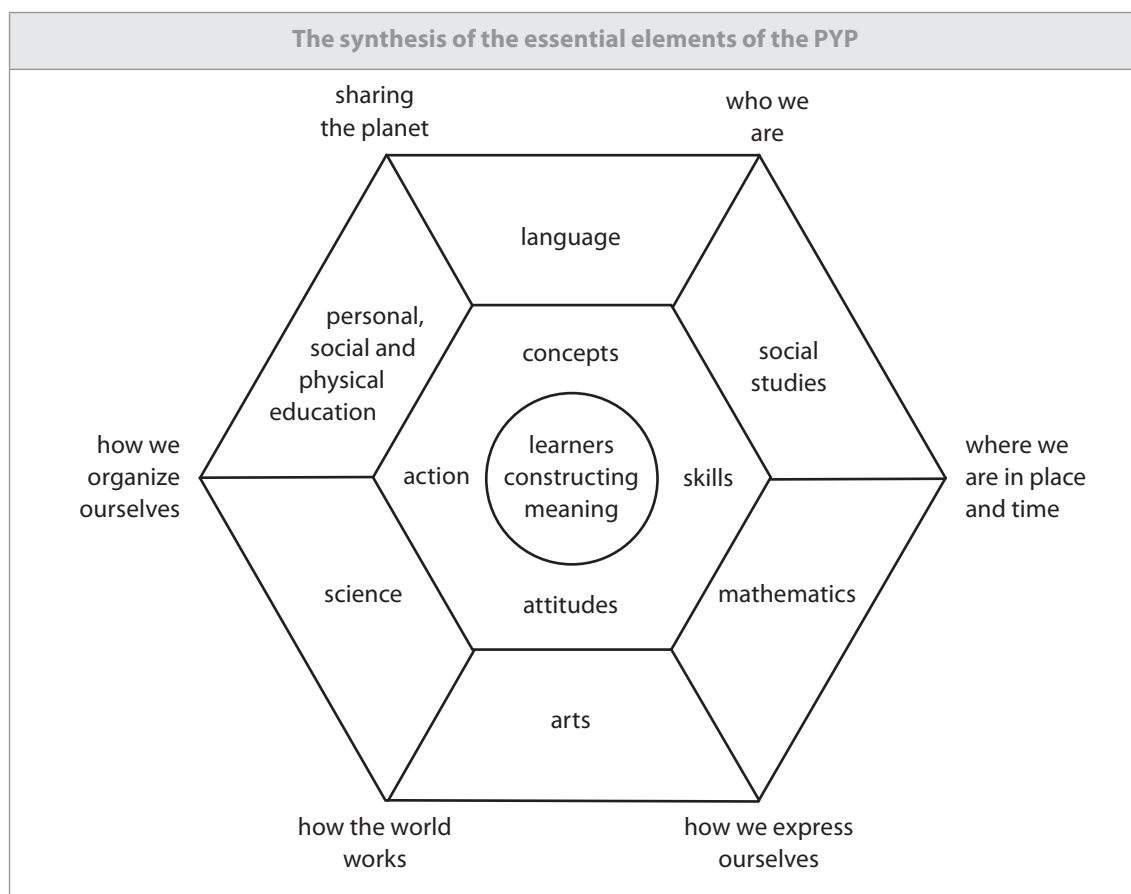


Figure 18

## What changes will this mean for the school?

There is a belief in the PYP in a particular approach to teaching and learning. Nevertheless, it is also recognized that many educational innovations (or, more accurately, educational reworkings) suffer from the advocacy of a narrow, exclusive approach. The PYP represents an approach to teaching that is broad and inclusive, in that it provides a context within which a wide variety of teaching strategies and styles can be accommodated, provided that they are driven by a spirit of inquiry and a clear sense of purpose.

The degree of change required to implement this approach at the school-wide level will, obviously, depend on conditions within the school at the time of implementation. However, to be realistic, the school community must recognize that:

- school-wide adoption of the PYP approach will require change not only in the classroom but throughout the school
- this change is likely to be slow, beset with insecurities and with difficulties (these difficulties are always associated with any change that requires people to examine and modify their current practice)
- engaging in this change process will have a beneficial impact on the whole school, the individual teacher and, most significantly, on the quality of student learning, and the struggle will be worth it
- the process of change in teaching practices will require substantial support from all teachers and administrators.



## What changes will this mean for teachers?

Again, the degree of change will depend on the individual teacher. For those teachers who have grown weary of imposed change for which they see little point, it should be stressed that teachers are not expected to discard years of hard-earned skill and experience in favour of someone else's ideas on good teaching. It is suggested, rather, that teachers engage in reflection on their own practice, both individually and in collaboration with colleagues, with a view to sharing ideas and strengths, and with the primary aim of improving their teaching to improve student learning. In doing so, they will be modelling the skills and attitudes that have been identified as essential for students.

As an aid to reflection, a set of generic examples of good practice has been produced that, it is believed, is worthy of consideration by anyone committed to continuous improvement. Subject-specific examples of changing practice are to be found in the annex.

## PYP practices

Planning		Teaching		Assessing	
Increased emphasis on:	Decreased emphasis on:	Increased emphasis on:	Decreased emphasis on:	Increased emphasis on:	Decreased emphasis on:
planning collaboratively using an agreed system and the PYP planner where appropriate	planning in isolation from other teachers	using a range and balance of teaching strategies	over-reliance on a limited set of teaching strategies	viewing planning, teaching and assessing as interconnected processes	viewing planning, teaching and assessing as isolated processes
planning based on agreed student-learning outcomes and in the context of a coherent school-wide programme	planning disconnected from the curriculum	grouping and regrouping students for a variety of learning situations	over-reliance on one grouping strategy	using a range and balance of assessment strategies and tools	over-reliance on one assessment strategy or tool
involving students in planning for their own learning and assessing	the teacher making all the decisions	viewing students as thinkers with emerging theories of the world	viewing the teacher as the sole authority	involving students in self- and peer-assessment	viewing assessment as the sole prerogative of the teacher
planning that builds upon students' prior knowledge and experience	planning that ignores students' prior knowledge and experience	building on what students know	focusing on what students do not know	using a range and balance of recording and reporting strategies	over-reliance on one strategy of recording and reporting
planning fewer inquiries, to be explored in depth	planning a large number of activities that will be covered superficially	using multiple resources representing multiple perspectives	over-reliance on one teaching resource from one culture	seeking student responses in order to understand their current understanding	seeking student responses solely to identify the right answer
addressing assessment issues throughout the planning process	addressing assessment issues at the conclusion of the planning process	empowering students to feel responsible and to take action	teaching about responsibility and the need for action by others	using formative assessment to give students regular and ongoing feedback throughout the unit	concluding each unit only by summative testing

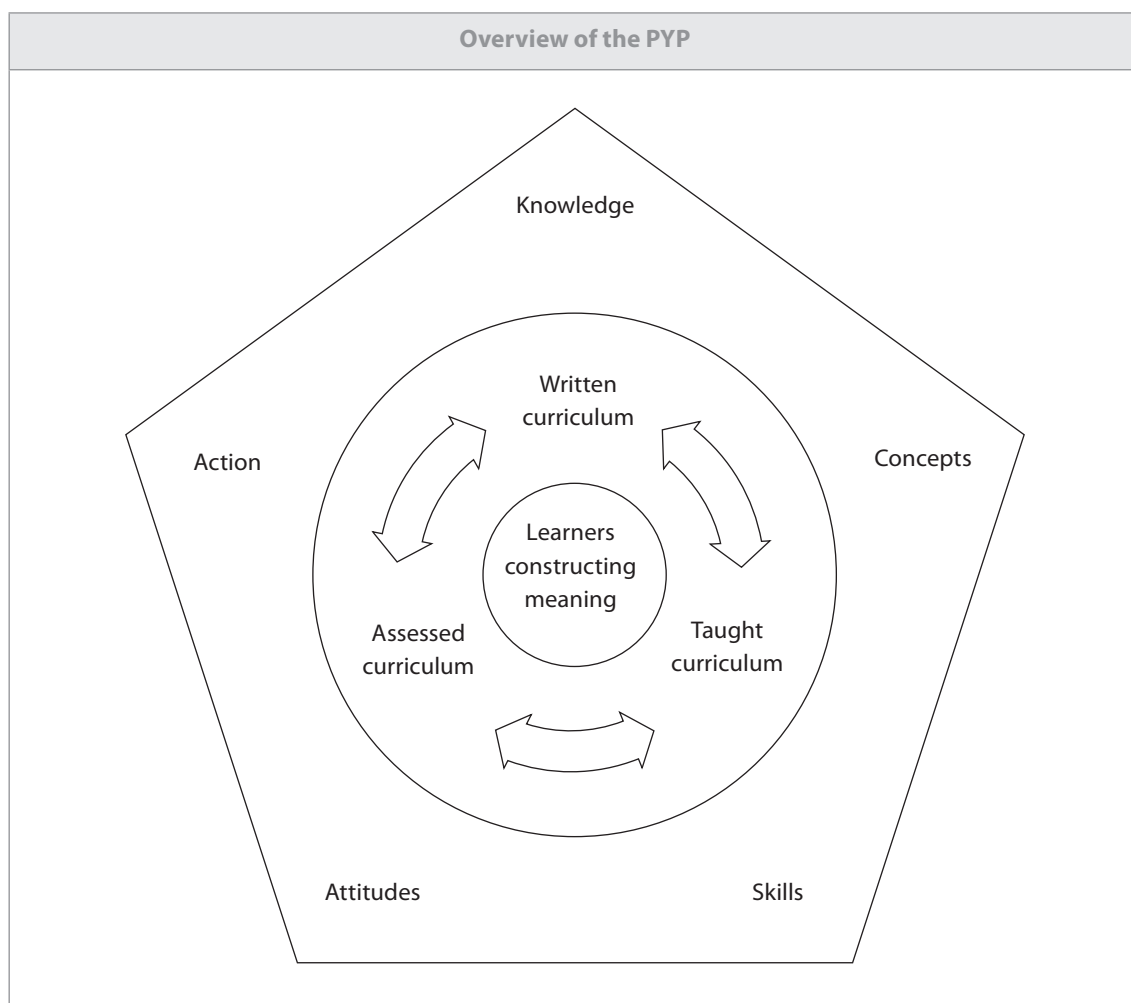
Figure 19

Planning		Teaching		Assessing	
Increased emphasis on:	Decreased emphasis on:	Increased emphasis on:	Decreased emphasis on:	Increased emphasis on:	Decreased emphasis on:
planning that emphasizes the connections between and beyond the subject areas	planning that presents the curriculum as separate, isolated subject areas	involving students actively in their own learning	viewing students as passive recipients	enabling students to see assessment as a means of describing learning and improving learning	assessing for the sole purpose of assigning grades
planning that recognizes a variety of levels of language competency	planning that assumes a single level of language competency	pursuing open-ended inquiry and real-life investigations	a teacher-directed focus on rigid objectives	assessing the levels of students' current knowledge and experience before embarking on new learning	embarking on new learning before assessing the levels of students' current knowledge and experience
planning that recognizes a range of ability levels	planning that assumes a single level of ability	maintaining constant awareness of the needs of additional-language learners	employing teaching strategies suitable only for students whose mother tongue is the language of instruction	evaluating collaboratively using an agreed, flexible system.	evaluating units in isolation from other teachers.
planning inquiries that explore similarities and differences between cultures/places	planning activities that focus on one culture/place	addressing the needs of students with different levels and types of ability.	employing teaching strategies suitable for one level and type of ability.		
planning inquiries that explore broad human experiences from a range of perspectives	planning activities where the cross-cultural dimension is tokenistic and the international dimension is tacked on				
planning inquiries that focus directly on significant issues.	planning activities in which exploration of significant issues is incidental.				

Figure 19 (continued)

## The PYP as a holistic programme

The word “holistic” is much abused. Nonetheless, it is applicable in describing the PYP curriculum model that presents the essential elements as a whole; the written, taught and assessed components of the curriculum as a whole; the transdisciplinary themes and subject areas as aspects of a whole; and the school community as a whole. It is a difficult task to try to represent a holistic programme visually, particularly one as multifaceted as the PYP. However, figure 20 is an attempt to condense and articulate those parts as simply as possible.



**Figure 20**

Finally, there is one greater whole that is firmly supported within the PYP. The IBO is working towards the formation of IB World Schools into a collaborative international community, in which each school retains its identity and autonomy but shares its strengths and ideas with other IB World Schools. The movement towards the creation of a system of international education that will better serve our students is welcomed within the PYP community.

This document represents the work of many teachers, administrators and consultants over an extended period. The IBO trusts that it provides one more piece of the picture, one more step towards creating the system of international education in which we so firmly believe.

## Bibliography

- Alexander, R. 1995. *Versions of Primary Education*. Routledge. 0-415-12838-2.
- Bartlett, K. 1998. "International Curricula: More or Less Important at the Primary Level?" in *International Education: Principles and Practice*, edited by Hayden, M and Thompson, J. Kogan Page, pp 77–91.
- Bartlett, K. 1997. "Articulating the International Curriculum: Continuity through Outcomes (Part 2)". *International Schools Journal* 17, number 1, pp 50–57.
- Bartlett, K. 1997. "How the Primary Years Programme Came into Being". *IB World*, number 16, pp 15–17.
- Bartlett, K. 1996. "Articulating the International Curriculum: Continuity through Commonalities (Part 1)". *International Schools Journal* 16, number 1, pp 30–38.
- Bartlett, K. 1994. "Internationalism: Getting Beneath The Surface. Part 2: The Role of Language". *International Schools Journal*, number 27, pp 53–56.
- Bartlett, K. 1993. "Internationalism: Getting Beneath The Surface. Part 1: Internationalism? It's about thinking!" *International Schools Journal*, number 26, pp 35–38.
- Bartlett, K. 1992. "Defining International Education: A Proposal for the Future". *International Schools Journal*, number 23, pp 45–52.
- Bartlett, K. 1989. "Translating Philosophy into Action". *International Schools Journal*, number 18, pp 59–67.
- Boyer, EL. 1995. *The Basic School: A community for learning*. The Carnegie Foundation for the Advancement of Teaching. 0-931050-48-0.
- Bredenkamp, S and Copple, C (editors). 1997. *Developmentally Appropriate Practice in Early Childhood Programs*. National Association for the Education of Young Children. 0-935989-79-X.
- Bruner, J. 1990. *Acts of Meaning*. Harvard University Press. 0-674-00361-6.
- Bruner, J. 1986. *Actual Minds, Possible Words*. Harvard University Press. 0-674-00366-7.
- Caldwell, BJ and Spinks, JM. 1998. *Beyond the Self-Managing School*. RoutledgeFalmer. 0-7507-0448-9.
- Ceppi, G and Zini, M. *Children, Spaces, Relations: Metaproject for an environment for young children*. Reggio Children Domus Academy Research Center. 88-87960-17-8.
- Chandler, D. 2002. *Semiotics: The Basics*. Routledge. 0-415-35111-1.
- Coles, MJ and Southworth, G. *Developing Leadership. Creating the schools of tomorrow*. Open University Press. 0-335-21542-4.
- Corson, D. 2001. *Language Diversity and Education*. Lawrence Erlbaum Associates. 0-8058-3449-4.
- Corson, D. 1999. *Language Policy in Schools: A Resource for Teachers and Administrators*. Lawrence Erlbaum Associates. 0-8058-3296-3.
- Costa, AL (editor). 2001. *Developing Minds: A resource book for teaching thinking* (3rd edition). Association for Supervision and Curriculum Development. 0-87120-379-0.

- Costa, AL and Kallick, B (editors). 2000. *Assessing and Reporting on Habits of Mind*. Association for Supervision and Curriculum Development. 0-87120-370-7.
- Costa, AL and Kallick, B (editors). 2000. *Discovering and Exploring Habits of Mind*. Association for Supervision and Curriculum Development.
- DeVries, R, Zan, B, Hildebrandt, C, Edmiaston, R, and Sales, C. 2002. *Developing Constructivist Early Childhood Curriculum. Practical principles and activities*. Teachers College Press. 0-8077-4120-5.
- Duncan, A. 1993. *What Primary Teachers Should Know About Maths* (2nd edition). Hodder & Stoughton. 0-340-64377-3.
- Edwards, C, Gandini, L and Forman, G. 1998. *The Hundred Languages of Children (The Reggio Emilia Approach: Advanced Reflections)* (2nd edition). Ablex Publishing Corporation. 1-56750-311-X.
- Eisner, EW. 2001. "The Role of the Arts in Cognition and Curriculum" in *Developing Minds: A Resource Book for Teaching Thinking* (3rd edition), edited by Costa, A. Association for Supervision and Curriculum Development (ASCD).
- Eisner, EW. 1985. *The Educational Imagination On the Design and Evaluation of School Programs* (2nd edition). Macmillan Publishing Company. 0-02-332110-5.
- ESTYN. 2002. *Standards and Quality in Personal and Social Education in Primary and Secondary Schools in Wales*. Schools inspection service in Wales.
- Fullan, M. 2001. *Leading in a Culture of Change*. Jossey-Bass Publishers. 0-7879-5395-4.
- Fullan, M. 2001. *The New Meaning of Educational Change* (3rd edition). RoutledgeFalmer. 0-415-26020-5.
- Gallas, K. 1994. *The Languages of Learning. How children talk, write, dance, draw, and sing their understanding of the world*. Teachers College Press. 0-8077-3305-9.
- Gardner, H. 1993. *Multiple Intelligences: The theory in practice*. Basic books. 0-465-01822-X.
- Grennon Brooks, J and Brooks, MG. 2001. *In Search of Understanding. The Case for Constructivist Classrooms*. Association for Supervision and Curriculum Development. 0-87120-211-5.
- Halliday, M. 1980. "Three Aspects of Children's Language Development: Learning language, Learning through Language, Learning about Language", in *Oral and Written Language Development Research*, edited by Goodman, Y, Haussler, MH and Strickland, D, pp 7–19. National Council of Teachers of English.
- Hargreaves, A and Fink, D. 2006. *Sustainable Leadership*. Jossey-Bass Publishers. 0-7879-6838-2.
- Hayden, M, Thompson, J, Walker, G (editors). 2002. *International Education in Practice: Dimensions for national and international schools*. Kogan Page Limited. 0-7494-3835-5.
- Hayes Jacobs, H. 2004. *Getting Results with Curriculum Mapping*. Association for Supervision and Curriculum Development. 0-87120-999-3.
- Hayes Jacobs, H. 1997. *Mapping the Big Picture: Integrating curriculum and assessment K-12*. Association for Supervision and Curriculum Development. 0-87120-286-7.
- Hayes Jacobs, H. 1989. *Interdisciplinary Curriculum: Design and implementation*. Association for Supervision and Curriculum Development.
- Innis, RE. 1985. *Semiotics: An introductory anthology*. Indiana University Press. 0-253-20344-9.

- Kozulin, A, Gindis, B, Ageyev, VS, and Miller, SM (editors). 2003. *Vygotsky's Educational Theory in Cultural Context* (Learning in Doing: Social, Cognitive & Computational Perspectives S.). Cambridge University Press. 0-5215-2883-6.
- Llewellyn, D. 2002. *Inquire Within: Implementing inquiry-based science standards*. Corwin Press. 0-7619-7745-7.
- Lynn Erickson, H. 2002. *Concept-Based Curriculum and Instruction: Teaching beyond the facts*. Corwin Press. 0-7619-4640-3.
- Lynn Erickson, H. 2001. *Stirring the Head, Heart, and Soul: Redefining curriculum and instruction* (2nd edition). Corwin Press. 0-8039-6885-X.
- McTighe, J and Wiggins, G. 1999. *The Understanding by Design Handbook*. Association for Supervision and Curriculum Development. 0-87120-340-5.
- McTighe, J and Wiggins, G. 2004. *Understanding by Design Professional Development Workbook*. Association for Supervision and Curriculum Development. 0-87120-855-5.
- National Council of Teachers of Mathematics. 2000. *Principles and standards for school mathematics and teacher education: Preparing and empowering teachers*. NCTM.
- New Zealand Ministry of Education. 1997. *Social studies in the New Zealand Curriculum*.
- New Zealand Ministry of Education. 1997. *Science in the New Zealand Curriculum*.
- Olson, DR and Torrance, N (editors). 1998. *The Handbook of Education and Human Development. New Models of Learning, Teaching and Schooling*. Blackwell Publishers. 0-631-21186-1.
- Perkins, D. 1995. *Outsmarting IQ: The emerging science of learnable intelligence*. The Free Press. 0-02-925212-1.
- Project Zero. 2001. *Making Learning Visible. Children as individual and group learners*. Reggio Children. 88-87960-25-9.
- Reggio Children. 1995. *Le Fontane*. Reggio Children S.r.l.
- Reggio Children. *Reggio Children*. Reggio Children S.r.l.
- Reggio Children. 1997. *Scarpa e Metro*. Reggio Children S.r.l.
- Selley, N. 1999. *The Art of Constructivist Teaching in the Primary School. A Guide for Students and Teachers*. David Fulton Publishers. 1-85346-572-0.
- Short, KG. 1997. *Literature as a Way of Knowing*. Stenhouse Publishers. 1-57110-0636.
- Short, KG and Burke, C. 1991. *Creating Curriculum: Teachers and students as a community of learners*. Heinemann. 0-435-08590-5.
- Short, KG, Harste, JC and Burke, C. 1996. *Creating Classrooms for Authors and Inquirers* (2nd edition). Heinemann. 0-435-08850-5.
- Short, KG, Schroeder, J, Laird, J, Kauffman, G, Ferguson, M and Crawford, K. 1996. *Learning Together Through Inquiry. From Columbus to Integrated Curriculum*. Stenhouse Publishers. 1571100334.
- Tobin, K (editor). 1995. *The Practice of Constructivism in Science Education*. Lawrence Erlbaum Associates. 0-8058-1878-2.
- Vygotsky, L. 1999. *Thought and Language*. The MIT Press. 0-262-72010-8.
- Wells Lindfor, J. 1999. *Children's Inquiry: Using language to make sense of the world*. Teachers College Press. 0-8077-3836-0.

Wiggins, G. 1998. *Educative Assessment. Designing Assessments to Inform and Improve Student Performance*. Jossey-Bass Publishers. 0-7879-0848-7.

Wiggins, G and McTighe, J. 2005. *Understanding by Design. Expanded 2nd edition*. Association for Supervision and Curriculum Development. 1-4166-0035-3.

Wiggins, G and McTighe, J. 2000. *Understanding by Design: Study guide*. Association for Supervision and Curriculum Development. 0-87120-386-3.

Wiggins, G and McTighe, J. 1998. *Understanding by Design*. Association for Supervision and Curriculum Development. 0-87120-313-8.

Williams, B and Woods, M. 1997. "Building on Urban Learners Experiences". Association for Supervision and Curriculum Development.

Wurm, JP. 2005. *Working in the Reggio Way: A beginner's guide for American teachers*. National Association for the Education of Young Children. 1-929610-64-5.



## Introduction

The information in this annex has been adapted from the existing subject area information to be found in *Making the PYP happen* (2000) and the subject-specific scope and sequence documents (2003/2004). The material contained in these publications has now been consolidated and revised where appropriate, to allow teachers to consider the subject area perspectives.

The PYP is first and foremost a transdisciplinary programme, organized around six themes of global significance. However, the individual subject areas have value in themselves, and provide students with knowledge and skills to explore the six transdisciplinary themes. Students should be made aware of the links to other areas of the curriculum in order to understand the interconnected nature of the subject areas both with one another and with the transdisciplinary themes.

Please note that mathematics, language(s) of instruction, social studies and science need to be the responsibility of the classroom teacher, the teacher with whom the students spend most of their time. Single-subject teaching of these areas is not consistent with the PYP model of transdisciplinary learning—learning that transcends the confines of the subject areas, but is supported by them. Personal and social education is the responsibility of all PYP teachers.

## Language in the Primary Years Programme

### Beliefs and values in language

Language stands at the center of the many interdependent cognitive, affective, and social factors that shape learning.

David Corson, *Language Policy in Schools: A Resource for Teachers and Administrators* (1999)

Language is fundamental to learning, thinking and communicating, and permeates the whole curriculum. It is necessary not only to learn language, but also learn about language and through language. Learning best takes place in authentic contexts, and literature plays a special role in enabling this to happen. The strands of **oral**, **written** and **visual communication** are learned across and throughout the subject areas. Each aspect is only relevant in relation to the whole.

PYP schools have a special responsibility to recognize and support language development to ensure that all students are provided with the environment and the necessary language support to enable them to participate fully in the academic programme and in the social life of the school, as well as to develop as individuals. All teachers in a PYP school are considered teachers of language. Language learning plays a major role in schools where the language(s) of instruction may not be the student's first language. Research has shown that development of mother-tongue language is crucial for cognitive development and in maintaining cultural identity. It also has the potential to increase intercultural awareness and understanding, and enables students to remain in touch with and maintain esteem for the language, literature and culture of their home country. It is a strong predictor of their long-term academic achievement, including acquisition of other languages. Respect for differences between languages and between dialects should be promoted.

Every child benefits from having access to different cultures, perspectives and languages. Acquisition of more than one language enriches personal growth and helps facilitate international understanding. Therefore, a PYP school provides the opportunity for all students to learn more than one language. Exposure to and experience with language, in all its richness and diversity, opens doors to key questions about life and learning, and encourages students to develop responsible attitudes and find appropriate ways to take action, in order to make a difference in the world.

The IB learner profile is integral to teaching and learning language in the PYP because it represents the qualities of effective learners and internationally minded students. The learner profile, together with the five essential elements of the programme—knowledge, concepts, skills, attitudes and action—informs planning, teaching and assessing in language.

### Good language practice

Language is the major connecting element across the curriculum. Therefore, in a PYP school, the focus is not only on language for its own sake, but also on its application across the subject areas and throughout the transdisciplinary programme of inquiry. There are also connections with the wider community.

Language is a major connection between home and school. In a PYP school, mother-tongue language development is actively encouraged and supported. Resources, such as bilingual dictionaries, are available in several languages and students may present their learning in other languages, including their mother-tongue. In the PYP classroom, cooperative activities are common to optimize development of all the students' languages. The school and classroom libraries are kept up to date with books catering for all languages spoken in the school. Letters to parents are often translated before being sent home; students are encouraged to use books in their own language for project work, and mother-tongue classes may be part of the programme.

Students need many opportunities to listen and speak in order to communicate effectively, and to establish and maintain relationships. Talk in the classroom is fundamental to promoting language learning.

Literature is an integral part of the curriculum. Carefully selected books can be read as an author study; a biography might be the introduction to a science investigation; early years counting stories can be reinforcement for mathematics development. Books are read for enjoyment and can also be discussed, analysed, compared and contrasted. Students learn how to understand, interpret and respond to the ideas, attitudes and feelings expressed in various texts; to think critically about what they read; and to be able to make predictions and inferences based on information that is both explicit and implicit in a text.

Writing is a significant activity in PYP classes of all ages. The writing process involves creating an environment where students can acquire the skills necessary to produce written products for a variety of purposes. The written product can be formal, informal, personal or reflective. It can be informative, persuasive, poetic, or in the form of a story or dialogue. When learning to write, students are encouraged to focus at first on meaning rather than accuracy, and to enjoy the writing process.

Teachers in PYP schools should strive to develop a caring language community, in which all students feel accepted and confident that they will be supported by others in language learning and in taking risks. To encourage students to take risks in language learning (especially learning an additional language), they need to believe that there is a good chance they will succeed; they may not be willing to try unless they believe they have the confidence to get it at least partially right. Teachers need to structure teaching/learning situations so that students have opportunities for success. They use techniques that support students during the communication process and provide the "missing bits" when students cannot fully express their meaning—this is often referred to as **scaffolding**. In practical terms, scaffolding includes such things as body language and gestures; language accompanying actions; building on to what other students say; and guided questioning.

Learning language in a PYP classroom extends beyond the classroom walls, and has close connections to the central school library/media centre and to other classrooms. The teacher plans in collaboration with other classroom teachers and single-subject teachers. Additional-language teachers play a particularly important role in reinforcing, supporting and extending the classroom work.

The PYP classroom is also connected to the broader world through technology: students research and communicate not only through printed media, but also through global electronic networks, in order to access a vast range of multimedia resources.

A PYP teacher's personal knowledge of language teaching and learning is of key importance. What teachers themselves understand shapes which resources they choose, what learning experiences they design and how effectively they teach. The teacher's own interest in, and development of, language teaching and learning is maintained through regular professional development, reading of professional journals and, especially, through regular contact with colleagues who share their commitment to teaching language through inquiry. Commercially available resources for teaching language are carefully evaluated to ensure that they meet the requirements of the teacher, the students and the curriculum.

## The role of language in the programme of inquiry

The programme of inquiry provides an authentic context for students to develop and use language. Wherever possible, language should be taught through the relevant, realistic context of the units of inquiry. The teacher plans language instruction that supports students' inquiries and the sharing of their learning.

Links to the transdisciplinary themes or central idea should be explicitly made when language is being taught outside the programme of inquiry. A developing understanding of these links will contribute to the students' understanding of the use of language in the world.

Regardless of whether language is being taught within or outside the programme of inquiry, in the PYP it is believed that purposeful inquiry is the way in which students learn best. The starting point should always be students' prior and current understanding. However, it should also be recognized that there are occasions when it is preferable for students to be given a series of strategies for learning language (including rote learning) in order to progress in their understanding rather than struggling to proceed.

## How language practices are changing

Structured, purposeful inquiry is the main approach to teaching and learning language in the PYP. However, it is recognized that many educational innovations (or, more accurately, educational reworkings) suffer from the advocacy of a narrow, exclusive approach. The PYP represents an approach to teaching that is broad and inclusive, in that it provides a context within which a wide variety of teaching strategies and styles can be accommodated, provided that they are driven by a spirit of inquiry and a clear sense of purpose.

The degree of change needed to teach language in this way will depend on the individual teacher. For those teachers who have grown weary of imposed change for which they see little point, it should be stressed that teachers are not expected to discard years of hard-earned skill and experience in favour of someone else's ideas on good teaching. It is suggested, rather, that teachers engage in reflection on their own practice, both individually and in collaboration with colleagues, with a view to sharing ideas and strengths, and with the primary aim of improving their teaching to improve student learning. In doing so, they will be modelling the skills and attitudes that have been identified as essential for students.

As an aid to reflection, the following set of subject-specific examples of good practice has been produced. It is believed that these examples are worthy of consideration by anyone committed to continuous improvement.

How are language practices changing?	
Increased emphasis on:	Decreased emphasis on:
promoting integrated language development	teaching language as isolated strands
language as a transdisciplinary element throughout the curriculum	language as a separate discipline
additional-language teachers viewed (and viewing themselves) as PYP teachers	additional-language teachers seen as solely single-subject teachers
a literature-based approach to learning language	using skill-drill texts and workbooks to learn language
a teaching approach that sees making mistakes in language as inevitable and necessary for learning	a teaching approach that focuses on encouraging students not to make mistakes in language

How are language practices changing?	
Increased emphasis on:	Decreased emphasis on:
reading for meaning	decoding only for accuracy
reading selected according to interest level	reading selected according to decoding level
student-selected reading materials	teacher-directed reading materials
making world classics available for reading	having only school classics available for reading
making culturally diverse reading material available	having only monocultural reading materials available
focusing on meaning when reading and writing	focusing primarily on accuracy when reading and writing
encouraging appropriate cooperative discussion in the classroom	enforcing silent, individual work in the classroom
students engaged in spontaneous writing	students carrying out teacher-imposed writing
a variety of scaffolded learning experiences—with the teacher providing strategies for the student to build on his or her own learning	activities where teachers simply model language for students
writing as a process	writing only as a product
developing a range of independent spelling strategies	a dependence on the teacher as the only source of correct spelling
nurturing appreciation of the richness of language	language study as grammar and syntax
literature as a means of understanding and exploring	literature study as vocabulary, grammar and syntax
teaching students to read and research using multimedia resources	providing print-only resources for reading and research
using language for creative problem solving and information processing	using language for rote learning
a range of appropriate assessment methods such as portfolios, conferencing, miscue analysis, writing sample analysis, response journals.	standardized reading and writing assessments.

## Knowledge and skills in language

Language is a complex web of connections, transcending the artificial separations of disciplines. Human language is a natural phenomenon, and language learning is instinctive in childhood. The learning process simultaneously involves **learning language** (as students listen to and use language with others in their everyday lives), **learning about language** (as students try to understand how language works), and **learning through language** (as students use language as a tool to think about, or reflect on a theme, concept or issue) (Halliday 1980). The three aspects, operating together in a relevant context, provide the most supportive learning environment for language learners.

We need to develop students' appreciation of language, their awareness of the nature of language, of the many influences on language, and of the variety in and between languages and dialects. Students should recognize the transdisciplinary nature of language—they use language within and across the disciplines and in a way that transcends them, both inside and outside the classroom. They should be encouraged to recognize that competency in language—and in more than one language—is a valuable life skill, a powerful tool both in societal communication and as a means of personal reflection. Furthermore, learning that language and literature is a creative process encourages the development of imagination and creativity through self-expression.

## What do we want students to know?

<b>Metalanguage:</b> using language to learn about language	<p>Using language both as an instrument for thought and social interaction, and for understanding about the nature of language itself.</p> <ul style="list-style-type: none"> <li>• The diversity of functions of language</li> <li>• Circumstantial effects/changes (style, audience, purpose)</li> <li>• Variety in and between languages and dialects</li> <li>• Historical, geographical and societal influences on language</li> <li>• Language as a power in society</li> <li>• Language as a means of reflection</li> <li>• Language as a valuable life skill</li> <li>• Language as a system of communication</li> </ul>
<b>Transdisciplinary language:</b> learning through language	<p>The language of other disciplines.</p> <ul style="list-style-type: none"> <li>• Language of the arts</li> <li>• Language of mathematics</li> <li>• Language of science</li> <li>• Language of social studies</li> <li>• Language of personal, social and physical well-being</li> <li>• Language of technology</li> </ul>
<b>Literature:</b> language as an art	<p>The body of written works of a language, period or culture considered worthy of aesthetic merit.</p> <ul style="list-style-type: none"> <li>• Variety in literary forms, structure, elements and purposes</li> <li>• The importance of literature as a way of understanding ourselves and others</li> <li>• Differences and similarities in literature (structure, purpose, cultural influence)</li> <li>• Literature as a power to influence and structure thinking.</li> </ul>

It is recognized that for students to participate fully in their language learning, they need to be empowered to comprehend language through listening, reading and viewing, and to express themselves with increasing confidence through speaking, writing and presenting. As part of their overall language acquisition, students need to develop both proficiency and enjoyment in these areas of communication. These areas are addressed in the *Language scope and sequence* (2003) document by arranging the major language expectations into three main strands: oral communication, written communication and visual communication.

These communication strands are then organized into the sub-strands of listening and speaking, reading and writing, viewing and presenting. Each of the sub-strands is addressed separately, although in practice they are interactive and interrelated elements of language. There are many related concepts that could provide further links to the transdisciplinary programme of inquiry or further understanding of language. Related concepts, such as voice, pattern and audience, have been embedded into the descriptions for each of the strands. Schools may choose to develop further related concepts.

## Language strands

### Oral communication: listening and speaking

**Oral communication** enables students to construct meaning through the process of articulating thoughts in a variety of ways. Oral communication encompasses all aspects of listening and speaking: skills that are essential for language development, for learning and for relating to others. In the area of oral communication, students will learn to:

- listen and respond to a range of texts, and to the ideas and opinions of others
- improve fluency and accuracy when speaking
- ask and answer questions; relate and retell; persuade; talk about needs, feelings, ideas or opinions; contribute to discussions in a range of formal and informal situations
- recognize that oral language needs to be appropriate to the audience and to the purpose
- communicate orally in more than one language.

### Written communication: reading and writing

Reading is constructing meaning from text by making inferences and interpretations. The process of reading is interactive and involves the reader's purpose for reading, the reader's prior knowledge and experience, and the **text** itself. Writing allows us to develop, organize and communicate thoughts, ideas and information in a visible or tangible way. In the area of written communication, students will learn to:

- read and write for enjoyment, instruction and information
- recognize and appreciate the variety of literary styles, genres and structures; poetry, plays and stories; creative, informative, instructional, persuasive and reflective text
- understand and apply a variety of structures, strategies and literary techniques (spelling, grammar, prediction, plot, character, punctuation, voice).

### Visual communication: viewing and presenting

Viewing and presenting means interpreting or constructing visuals and multimedia in a variety of situations and for a range of purposes and audiences. They allow students to understand the ways in which images and language interact to convey ideas, values and beliefs. Visual images immediately engage viewers, allowing them instant access to data. Learning to interpret this data and to understand and use different media are invaluable skills. In the area of visual communication, students will learn to:

- understand, critically analyse and communicate information and ideas through a variety of visual media
- make informed choices in their personal viewing experiences
- use appropriate technology for effective presentation and representation.

## Key concepts in the PYP: what do we want students to understand about language?

Central to the philosophy of the PYP is the principle that purposeful, structured inquiry is a powerful vehicle for learning that promotes meaning and understanding, and challenges students to engage with significant ideas. Hence in the PYP there is also a commitment to a **concept-driven curriculum** as a means of supporting that inquiry. There are clusters of ideas that can usefully be grouped under a set of overarching concepts, each of which has major significance within and across disciplines, regardless of time or place.

These key concepts are one of the essential elements of the PYP framework. It is accepted that these are not, in any sense, the only concepts worth exploring, and examples of related concepts are provided later in this section. Taken together, they form a powerful curriculum component that drives the teacher- and/or student-constructed inquiries that lie at the heart of the PYP curriculum.

When viewed as a set of questions, the concepts form a research tool that is manageable, open-ended and more readily accessible to students. It is these questions, used flexibly by teachers and students when planning an inquiry-based unit, that shape that unit, giving it direction and purpose.

The following table explains each concept from both the generic perspective and the language perspective; a full explanation of the key concepts is found in the “Concepts: what do we want students to understand?” section.

Concept	Generic perspective	Language perspective
<b>Form</b> What is it like?	Everything has a form with recognizable features that can be observed, identified, described and categorized.	Every language has a form and a structure that makes it unique. Form may vary according to whether language is written or spoken.
<b>Function</b> How does it work?	Everything has a purpose, a role or a way of behaving that can be investigated.	The type of language we use varies depending on the circumstances, purpose, audience and genre.
<b>Causation</b> Why is it like it is?	Things do not just happen. There are causal relationships at work, and actions have consequences.	Language is fundamental to human activity. Many factors affect the development of language.
<b>Change</b> How is it changing?	Change is the process of movement from one state to another. It is universal and inevitable.	Language is not static; it changes constantly.
<b>Connection</b> How is it connected to other things?	We live in a world of interacting systems in which the actions of any individual element affect others.	Language is a major connecting system within, between and among all societies.



Concept	Generic perspective	Language perspective
<b>Perspective</b> What are the points of view?	Knowledge is moderated by perspectives. Different perspectives lead to different interpretations, understandings and findings. Perspectives may be individual, group, cultural or disciplinary.	Language can be interpreted and expressed in different ways. Literature, in particular, offers cultural, historical and personal perspectives on the world, and invites different interpretations.
<b>Responsibility</b> What is our responsibility?	People make choices based on their understandings, and the actions they take as a result do make a difference.	Language is powerful and can have a profound effect, both positive and negative. Therefore, it must be used responsibly.
<b>Reflection</b> How do we know?	There are different ways of knowing. It is important to reflect on our conclusions, to consider our methods of reasoning, and the quality and reliability of the evidence we have considered.	Through language, we can reflect on our experiences and knowledge.

## Examples of questions that illustrate the key concepts

The following table provides sample teacher/student questions that illustrate the key concepts, which may help to structure or frame an inquiry. These examples demonstrate broad, open-ended questioning—requiring investigation, discussion, and a full and considered response—that are essential in an inquiry-led programme. Further examples can be found in the *Language scope and sequence* (2003) document.

Concept	Sample teacher/student questions
<b>Form</b> What is it like?	<ul style="list-style-type: none"> <li>• What are the ways in which stories can be told?</li> <li>• What are the parts of a book?</li> <li>• What languages do the students in our class/school use?</li> <li>• What makes this language unique?</li> </ul>
<b>Function</b> How does it work?	<ul style="list-style-type: none"> <li>• What part does literature play in the development of a culture?</li> <li>• Why do we name things?</li> <li>• How do different languages work?</li> <li>• How do the pictures and text work together?</li> </ul>
<b>Causation</b> Why is it like it is?	<ul style="list-style-type: none"> <li>• What part does language play in cultural identity?</li> <li>• To what extent does language influence thinking styles?</li> <li>• Why does the same language develop differently in different places?</li> <li>• Why did this author write the story the way it is?</li> </ul>

Concept	Sample teacher/student questions
<b>Change</b> How is it changing?	<ul style="list-style-type: none"> <li>How have our languages changed historically?</li> <li>What has influenced the development of the language of specific disciplines?</li> <li>How do we use language differently as we grow?</li> <li>How have other languages and cultures changed our own language?</li> </ul>
<b>Connection</b> How is it connected to other things?	<ul style="list-style-type: none"> <li>What are the similarities and differences between languages?</li> <li>What are the origins of names?</li> <li>How are storytelling traditions linked to culture?</li> <li>How do our experiences enable us to connect with stories?</li> </ul>
<b>Perspective</b> What are the points of view?	<ul style="list-style-type: none"> <li>How could knowledge of a language help us to understand the culture?</li> <li>Why do some books become best-sellers?</li> <li>Which language do you think is the easiest to learn?</li> <li>Why is written language different to spoken language?</li> </ul>
<b>Responsibility</b> What is our responsibility?	<ul style="list-style-type: none"> <li>How can the use of language influence people?</li> <li>How should we treat people who speak different languages from us?</li> <li>Why are there some books or web sites that we are not allowed to read?</li> <li>What responsibility does the author have to avoid bias and stereotyping?</li> </ul>
<b>Reflection</b> How do we know?	<ul style="list-style-type: none"> <li>How can literature help us to understand a culture?</li> <li>What kind of messages do authors try to convey to readers?</li> <li>How well have I “painted a picture with words” in my story?</li> <li>How do illustrations add to our understanding?</li> </ul>

## Overall expectations in language

The *Language scope and sequence* (2003) document identifies the expectations considered appropriate in the PYP. These expectations (outlined here) are not a requirement of the programme, but it is recommended that schools undertake a careful consideration of their scope and sequence document in order to identify the overall expectations in language for their students

When developing a scope and sequence, a school should bear in mind the following.

If the school adapts, or develops, its own scope and sequence documents for each PYP subject area, the level of overall expectation regarding student achievement expressed in these documents at least matches that expressed in the PYP scope and sequence documents.

*Programme standards and practices: C1.23, IBO (2005)*

Full details of sample questions, activities and assessments related to these expectations can be found in the *Language scope and sequence* (2003) document, available on the OCC.

The *Language scope and sequence* (2003) document is considered relevant to all teachers of language, including class/homeroom teachers, teachers of the language(s) of instruction, teachers of additional languages (including the host-country language) and teachers of mother-tongue languages. The specific expectations given here apply to each student in every language taught, although the means and pace of teaching and learning vary in different contexts. There are so many variables in students' backgrounds and experience that it is likely that, even in a single age group, there will be enormous diversity in the levels of language and literacy development. For additional-language learning, it may be practical to relate the existing four age strands to emergent (3–5 years), developing (5–7 years), consolidating (7–9 years) and extending (9–11 years) learners of language. However, some of the expectations (for example, "making marks to emulate writing", age 3–5) would not necessarily apply for older additional-language learners.

### **3–5 years (emergent)**

#### **Oral communication: listening and speaking**

Students will use oral language for social interaction and to obtain knowledge of people, places and things in their environment and in the wider community. They will communicate needs, feelings and ideas in order to respond to a variety of experiences. They will participate appropriately in conversations, tell stories and events in sequence, and they will give and follow instructions. In order to learn to communicate effectively, students will be given daily opportunities to listen and speak in authentic contexts, either independently, in small groups or with the whole class.

#### **Written communication: reading and writing**

Students will be eager to read. They will enjoy playing and experimenting with reading behaviours as they practise reconstructing text. They will show an interest in books, stories, charts and songs as they "read" simple, familiar text using visual, contextual and memory cues to make sense of print. Students will "read" daily with support and guidance, either independently, in small groups or in whole-class situations. They will be encouraged to focus on the meaning of texts rather than on reading word by word with complete accuracy. Students will be read to daily, and they will have opportunities to read with and to one another, and to discuss what they have read. Through these experiences, students will gain an understanding of concepts about print.

Students will be curious about print. They will enjoy playing and experimenting with writing by making marks to emulate writing. They will progress from scribble or "pretend" writing, to writing letters and words. Drawing, sketching and diagramming are important parts of early writing development as students imitate, rehearse and think about the process. Students will use representations of their name (and/or those of family members) in a variety of ways. Regardless of their stage of written development, they will assign meaning to messages, and will gradually produce recognizable (though not necessarily conventional) spellings of a range of words. Students will be encouraged to write daily with or without support and guidance, either independently, in small groups or with the whole class.

#### **Visual communication: viewing and presenting**

Students will play, experiment, talk about and relate to a variety of media. They will enjoy using media to make sense of their world, and they will learn to respond both verbally and non-verbally. They will show a natural curiosity and interest in many forms of familiar visual communication and, with guidance and support, they will make connections between the real and the imaginary. Students will view and react to media items or factual information in order to understand and describe what they see.

## **5–7 years (developing)**

### **Oral communication: listening and speaking**

Students will use a variety of oral language appropriately and with increasing confidence. They will talk about their own thoughts, feelings and opinions, and they will be able to work in groups to discuss their ideas. They will appreciate that listening is important and, in both small- and large-group situations, listen with increasing concentration and consideration. They will be able to pick out main events and relevant points, and they will increase their ability to anticipate and predict. Students will listen to others carefully and with sensitivity.

### **Written communication: reading and writing**

Students will read for pleasure and information with increasing independence. They will be confident about their own reading and will continue to develop a range of reading strategies to decode and make sense of text. They will discuss stories heard and read, demonstrate an awareness of the role of the characters and plot, and they will respond to the ideas and feelings expressed. They will begin to use a variety of reference books and dictionaries independently. A balanced learning experience includes opportunities to participate either independently, in small groups or in whole-class situations. Daily independent and instructional reading are essential.

Students will write confidently, with developing legibility and fluency. They will write for a variety of purposes and will develop an understanding of different story structures. They will begin to plan, edit and review their own writing, showing an increasing ability to spell high-frequency words. They will begin to use spelling patterns and will continue to use their phonetic skills to spell, especially when constructing more complex words. As risk-takers, they will demonstrate confidence in attempting to write unfamiliar words using a variety of strategies. Daily independent and instructional writing are essential.

### **Visual communication: viewing and presenting**

Students will understand that communication involves visual, verbal and kinesthetic features. They will understand that signs and symbols carry meaning, and they will begin to read a range of signs widely used in their immediate environment. They will be able to read and use texts with different types of layout, and they will understand information presented by a range of visual media including television, theatre and computer. Using a variety of visual and technological media, students will search for, record and present information. As they continue to develop an increasing understanding of what they view, they will make more informed choices.

## **7–9 years (consolidating)**

### **Oral communication: listening and speaking**

Students will appreciate the power of oral language, and they will use speech with increasing awareness and responsibility. They will participate appropriately in discussions and will talk about a wide range of topics. They will use increasingly complex language confidently and creatively, with increasing accuracy, detail and range of vocabulary. They will become increasingly aware of the use of oral language to articulate, organize and reflect on learning. They will begin to communicate in more than one language.

### **Written communication: reading and writing**

Students will read a variety of fiction and non-fiction books confidently, fluently and independently, and they will be able to select books appropriate to their reading level and for a specific purpose. They will be interested in a variety of literature and will begin to show an appreciation of different literary styles. They will understand and respond to the ideas, feelings and attitudes expressed in various reading materials, and they will be able to use reference books, dictionaries and information technology independently. They will read daily in class and will regularly read for a sustained period of time, both in class and at home.

Students will develop fluency in writing, and they will write independently and with confidence. They will begin to use a wide and vivid vocabulary with supporting details. They will understand that different types of writing have different structures. They will write for a range of purposes, both creative and informational, and they will plan, edit and review their own writing. They will spell most high-frequency words accurately, and will use a range of strategies to spell words of increasing complexity. They will present their writing appropriately using a consistent, legible style.

**Visual communication: viewing and presenting**

Students will experience a wide variety of visual media materials. They will respond to viewing experiences orally and in writing. They will interpret visual media and recognize the power of visual media to influence thinking and behaviour, and they will begin to learn how to make informed choices in their personal viewing experiences. They will use a variety of materials to plan and create projects with different media, and will use electronic media (for example, CD-Rom, Internet) to find information.

**9–12 years (extending)****Oral communication: listening and speaking**

Students will show an increasing awareness of the power of oral language and how it helps them to construct meaning and connect with others. They will use speech responsibly to inform, entertain and influence others. They will understand that oral language is a medium for learning, and they will use the listening and speaking processes as learning strategies as well as for individual enjoyment. They will interact confidently with others in a variety of situations. They will use a wide variety of linguistic structures and features of spoken language to develop and present ideas and information, adapting their listening and speaking strategies to the context, purpose and audience. By reflecting on their own approach to communication and the ways in which others interact, they will monitor and assess their own learning.

**Written communication: reading and writing**

Students will read a wide range of texts with understanding and accuracy, and they will be able to use a variety of reading strategies for different texts and purposes. They will recognize and appreciate the various literary styles, forms and structures, and appreciate the structural and stylistic differences between fiction and non-fiction. They will be able to discuss what has been read, reflect on and talk about the feelings and motivations of the characters in a story, and analyse details of plot and characterization. They will appreciate the author's use of language, and they will begin to recognize meaning beyond the literal. They will locate and use a range of reference materials to find information, and they will understand that this information can be used to generate ideas and opinions and to guide research. They will read for enjoyment and information daily for sustained periods, both in school and at home.

Students will write fluently and effectively for a wide range of purposes, both creative and informal, using a range of styles. They will understand that different types of writing have different styles and structures, and that they are used for different purposes. Their writing will show a clear awareness of audience. They will use relevant and appropriate supporting details, a wide range of effective vocabulary, and a variety of sentence structures and sentence lengths. They will use an appropriate writing process independently and confidently; planning, revising and editing their own writing. Considering and acting on the responses of others, students will gain an awareness of themselves as authors, and they will develop their own voice and style to personalize their writing. They will write for enjoyment and communication daily for sustained periods, both in school and at home.

### **Visual communication: viewing and presenting**

Students will demonstrate appropriate viewing behaviour for a large range of visual material (movies, posters, CD-Roms, atlases, architectural plans, sculptures, paintings, graphic organizers, codes). They will respond to viewing experiences orally and in writing using specific vocabulary and terminology. They will show an understanding of media elements and the effect of design on the meaning of the visual. They will identify stereotypes and the purpose of visual material. They will be willing to work with a variety of materials to plan and carry out different projects. They will recognize the implications of commercial media, and they will make informed judgments about television, film and video productions.

## Mathematics in the Primary Years Programme

### Beliefs and values in mathematics

All students deserve an opportunity to understand the power and beauty of mathematics.

*Principles and standards for school mathematics*  
National Council of Teachers of Mathematics (NCTM 2000)

In the PYP, mathematics is viewed primarily as a vehicle to support inquiry, providing a global language through which we make sense of the world around us. It is intended that students become competent users of the language of mathematics, and can begin to use it as a way of thinking, rather than seeing it as a series of facts and equations to be memorized. The power of mathematics for describing and analysing the world around us is such that it has become a highly effective tool for solving problems.

It is also recognized that students can appreciate the intrinsic fascination of mathematics and explore the world through its unique perceptions.

It is important that students acquire mathematical understanding by constructing their own meaning, through ever-increasing levels of abstraction. Moreover, it is fundamental to the philosophy of the PYP that, since it is to be used in context, mathematics needs to be taught in relevant, realistic contexts, rather than through an attempt to impart a fixed body of knowledge directly to students.

The IB learner profile is integral to teaching and learning mathematics in the PYP because it represents the qualities of effective learners and internationally minded students. The learner profile, together with the five essential elements of the programme—knowledge, concepts, skills, attitudes and action—informs planning, teaching and assessing in mathematics.

### Good mathematics practice

Any development of mathematical understanding should start with students exploring their own personal experiences, understandings and knowledge. Schools that have local and/or national curriculum requirements should articulate how best these can be incorporated into their planning, teaching and assessing of mathematics. An example of how children learn mathematics is described in the following stages.

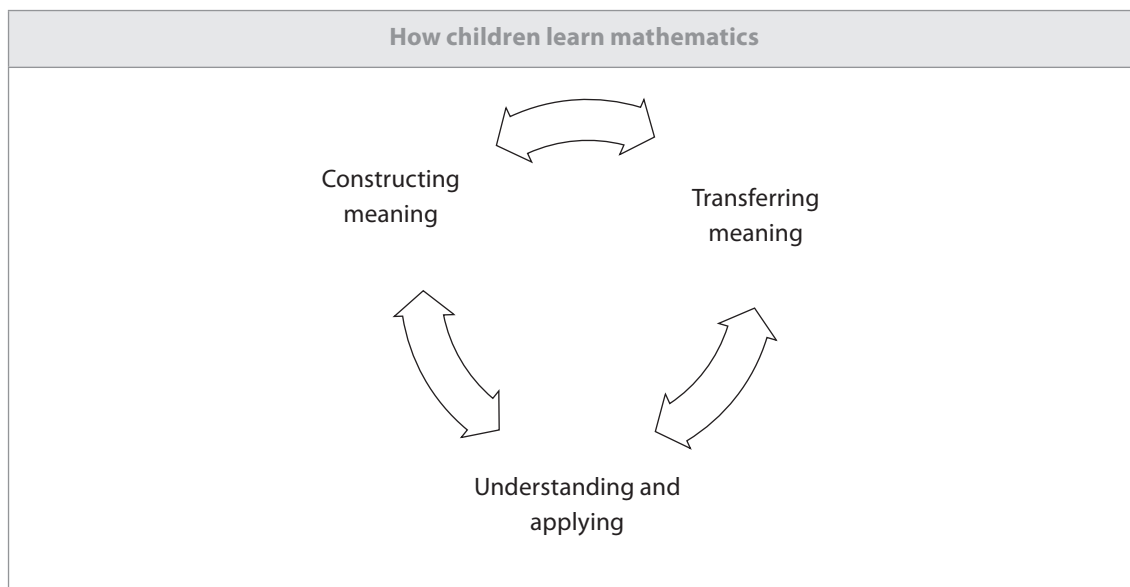


Figure 21

It is useful to identify these stages when planning developmentally appropriate learning experiences at all ages.

**Constructing meaning:** Students construct meaning from direct experiences, including the use of manipulatives and conversation.

**Transferring meaning:** Students connect the mathematical notation system with concrete objects and associated mathematical processes. The teacher provides the symbols for students. Students begin to describe their understanding using symbolic notation.

**Understanding and applying:** Through authentic activities, students independently select and use appropriate symbolic notation to process and record their thinking. As they work through these stages, students and teachers use certain processes of mathematical reasoning.

- They use patterns and relationships to analyse the problem situations upon which they are working.
- They make and evaluate their own and each other's ideas.
- They use models, facts, properties and relationships to explain their thinking.
- They justify their answers and the processes by which they arrive at solutions.

In this way, students validate the meaning they construct from their experiences with mathematical situations. By explaining their ideas, theories and results, both orally and in writing, they invite constructive feedback and also lay out alternative models of thinking for the class. Consequently, all benefit from this interactive process.

Play and exploration have a vital role in the learning and application of mathematical knowledge, particularly for younger students. In a PYP learning environment, mathematics skills and activities need to occur in authentic settings. As educators, we need to provide a variety of areas and resources to allow students to encounter situations that will introduce and develop these skills. In this environment, students will be actively involved in a range of activities that can be free or directed. In planning the learning environment and experiences, teachers need to consider that young students may need to revisit areas and skills many times before understanding can be reached. Applying mathematical skills to real-world tasks supports students' learning.



A PYP teacher's personal knowledge of mathematics is of key importance. What teachers themselves understand shapes which resources they choose, what learning experiences they design and how effectively they teach. The teacher's own interest in, and development of, the discipline is maintained through regular professional development, reading of professional journals and, especially, through regular contact with colleagues who share their commitment to teaching mathematics through inquiry. Commercially available resources for teaching mathematics are carefully evaluated to ensure that they meet the requirements of the teacher, the students and the curriculum.

Students and teachers should use the eight key concepts and related questions (presented later in this section) to guide their inquiries. Examples of how to do this can be found in the *Mathematics scope and sequence* (2003) document. Teachers should regard these as prompts for developing suitable activities to address the mathematics skills and concepts required.

## **The role of mathematics in the programme of inquiry**

Wherever possible, mathematics should be taught through the relevant, realistic context of the units of inquiry. The direct teaching of mathematics in a unit of inquiry may not always be feasible but, where appropriate, prior learning or follow-up activities may be useful to help students make connections between the different aspects of the curriculum. Students also need opportunities to identify and reflect on "big ideas" within and between the different strands of mathematics, the programme of inquiry and other subject areas.

Links to the transdisciplinary themes should be made explicitly, whether or not the mathematics is being taught within the programme of inquiry. A developing understanding of these links will contribute to the students' understanding of mathematics in the world. The role of inquiry in mathematics is important, regardless of whether it is being taught inside or outside the programme of inquiry. However, it should also be recognized that there are occasions when it is preferable for students to be given a series of strategies for learning mathematical skills (including rote learning) in order to progress in their mathematical understanding rather than struggling to proceed.

## How mathematics practices are changing

Structured, purposeful inquiry is the main approach to teaching and learning mathematics in the PYP. However, it is recognized that many educational innovations (or, more accurately, educational reworkings) suffer from the advocacy of a narrow, exclusive approach. The PYP represents an approach to teaching that is broad and inclusive, in that it provides a context within which a wide variety of teaching strategies and styles can be accommodated, provided that they are driven by a spirit of inquiry and a clear sense of purpose.

The degree of change needed to teach mathematics in this way will depend on the individual teacher. For those teachers who have grown weary of imposed change for which they see little point, it should be stressed that teachers are not expected to discard years of hard-earned skill and experience in favour of someone else's ideas on good teaching. It is suggested, rather, that teachers engage in reflection on their own practice, both individually and in collaboration with colleagues, with a view to sharing ideas and strengths, and with the primary aim of improving their teaching to improve student learning. In doing so, they will be modelling the skills and attitudes that have been identified as essential for students.

As an aid to reflection, the following set of subject-specific examples of good practice has been produced. It is believed that these examples are worthy of consideration by anyone committed to continuous improvement.

How are mathematics practices changing?	
Increased emphasis on:	Decreased emphasis on:
connecting mathematical concepts and applications to learning	treating mathematics as isolated concepts and facts
manipulatives, to make mathematics understandable to students	rote learning, memorization and symbol manipulation
real-life problem solving using mathematics	word problems as problem solving
instruction built on what students know, what they want to know, and how they best might find out	instruction focused on what students do not know
a variety of strategies for possible multiple solutions—emphasis on process	one answer, one method, emphasis on answer
students being encouraged to speculate and pursue hunches	the teacher as the sole authority for right answers
a broad range of topics regardless of computational skills	computational mastery before moving on to other topics
mathematics as a means to an end	teaching mathematics disconnected from other learning
the use of calculators and computers for appropriate purposes	a primary emphasis on pencil and paper computations
programme of inquiry as the context for learning	textbook as the context for learning
students investigating, questioning, discussing, justifying and journaling their mathematics	the use of worksheets
students and teachers engaged in mathematical discourse.	teacher telling about mathematics.

## Knowledge and skills in mathematics

The mathematics component of the curriculum of the PYP encompasses measurement, shape and number, and their many applications to students' everyday lives. Mathematics provides opportunities for students to engage in investigations into measurement, shape and number, and allows them to communicate in a language that is concise and unambiguous. Mathematics concepts and skills can also be applied to solve a variety of real-life problems. Students apply their mathematical reasoning to a number of situations in order to find an appropriate answer to the problems they wish to solve.

In the PYP, the mathematics component of the curriculum should be driven by concepts and skills rather than by content. The key concepts identified in the "Concepts: what do we want students to understand?" section are inevitably influential in driving the curriculum, but there are many other related mathematics concepts that provide further understanding of the subject area.

The *Mathematics scope and sequence* (2003) document identifies the expectations considered appropriate in the PYP. Within each of these interconnected strands, there should be a balance between the acquisition of knowledge and skills and the development of conceptual understanding. The mathematics knowledge component is arranged into five strands: **data handling, measurement, shape and space, pattern and function** and **number**.

In the **number** and **pattern and function** strands, students and teachers inquire into number systems and their operations, patterns and functions. They become fluent users of the language of mathematics as they learn to understand its meanings, symbols and conventions.

**Data handling, measurement** and **shape and space** are the areas of mathematics that other disciplines use to research, describe, represent and understand aspects of their domain. Mathematics provides the models, systems and processes for handling data, making and comparing measurements, and solving spatial problems. These three strands are, therefore, best studied in authentic contexts provided by the transdisciplinary units of inquiry.

All curriculum areas provide an opportunity to utilize the transdisciplinary skills identified in figure 8 in the “Skills: what do we want students to be able to do?” section. The mathematics component of the curriculum also provides opportunities for students to:

- count, sort, match and compare objects, shapes and numbers
- recognize and continue patterns (and relationships)
- use mathematical vocabulary and symbols (including informal mathematics)
- develop and implement/trial strategies for investigating a range of mathematical questions or problems
- select and use appropriate mathematics (operations, computations and units) to solve numerical and word problems
- make reasonable estimates
- analyse, make predictions and infer from data
- become confident and competent users of ICT in mathematics learning.

## Mathematics strands

### What do we want students to know?

#### Data handling

Data handling allows us to make a summary of what we know about the world and to make inferences about what we do not know.

- Data can be recorded, organized, represented and summarized in a variety of ways to highlight similarities, differences and trends; the chosen format should illustrate the information without bias or distortion.
- Probability can be expressed qualitatively by using terms such as “unlikely”, “certain” or “impossible”. It can be expressed quantitatively on a numerical scale.

<b>Measurement</b>	To measure is to attach a number to a quantity using a chosen unit. Since the attributes being measured are continuous, ways must be found to deal with quantities that fall between numbers. It is important to know how accurate a measurement needs to be or can ever be.
<b>Shape and space</b>	The regions, paths and boundaries of natural space can be described by shape. An understanding of the interrelationships of shape allows us to interpret, understand and appreciate our two- and three-dimensional world.
<b>Pattern and function</b>	To identify pattern is to begin to understand how mathematics applies to the world in which we live. The repetitive features of patterns can be identified and described as generalized rules called “functions”. This builds a foundation for the later study of algebra.
<b>Number</b>	<p>Our number system is a language for describing quantities and the relationships between quantities. For example, the value attributed to a digit depends on its place within a base system.</p> <p>Numbers are used to interpret information, make decisions and solve problems. For example, the operations of addition, subtraction, multiplication and division are related to one another and are used to process information in order to solve problems. The degree of precision needed in calculating depends on how the result will be used.</p>

**Related concepts:** There are many related concepts that could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Related concepts, such as pattern, boundaries and base systems, have been embedded into the descriptions for each of the strands above. Schools may choose to develop further related concepts.

## Key concepts in the PYP: what do we want students to understand about mathematics?

Central to the philosophy of the PYP is the principle that purposeful, structured inquiry is a powerful vehicle for learning that promotes meaning and understanding, and challenges students to engage with significant ideas. Hence in the PYP there is also a commitment to a **concept-driven curriculum** as a means of supporting that inquiry. There are clusters of ideas that can usefully be grouped under a set of overarching concepts, each of which has major significance within and across disciplines, regardless of time or place.

These key concepts are one of the essential elements of the PYP framework. It is accepted that these are not, in any sense, the only concepts worth exploring. Taken together, they form a powerful curriculum component that drives the teacher- and/or student-constructed inquiries that lie at the heart of the PYP curriculum.

When viewed as a set of questions, the concepts form a research tool that is manageable, open-ended and more readily accessible to students. It is these questions, used flexibly by teachers and students when planning an inquiry-based unit, that shape that unit, giving it direction and purpose.

The following table explains each concept from both the generic perspective and the mathematics perspective; a full explanation of the key concepts is found in the “Concepts: what do we want students to understand?” section.

Concept	Generic perspective	Mathematics perspective
<b>Form</b> What is it like?	Everything has a form with recognizable features that can be observed, identified, described and categorized.	The recognition, categorization and description of patterns throughout the curriculum.
<b>Function</b> How does it work?	Everything has a purpose, a role or a way of behaving that can be investigated.	The examination of systems, relationships, mechanics, components and patterns.
<b>Causation</b> Why is it like it is?	Things do not just happen. There are causal relationships at work, and actions have consequences.	An examination of the mathematical concepts and processes that influence the way things are.
<b>Change</b> How is it changing?	Change is the process of movement from one state to another. It is universal and inevitable.	Looking for evidence of change, analysing the evidence, drawing conclusions and making predictions.
<b>Connection</b> How is it connected to other things?	We live in a world of interacting systems in which the actions of any individual element affect others.	The examination of systems and strategies to identify different kinds and levels of relationships, within and between different strands of mathematics and beyond to other subject areas.
<b>Perspective</b> What are the points of view?	Knowledge is moderated by perspectives. Different perspectives lead to different interpretations, understandings and findings. Perspectives may be individual, group, cultural or disciplinary.	The examination of different ways individuals and cultures use mathematics to solve problems.  Developing respect for varied interpretations, explanations, strategies and solutions.
<b>Responsibility</b> What is our responsibility?	People make choices based on their understandings, and the actions they take as a result do make a difference.	Understanding the importance of communicating accurately and appreciating the obligation to apply mathematics with honesty.
<b>Reflection</b> How do we know?	There are different ways of knowing. It is important to reflect on our conclusions, to consider our methods of reasoning, and the quality and reliability of the evidence we have considered.	Being able to communicate how we have come to understand an idea, concept or skill. Being able to evaluate the effectiveness of strategies and tools used in order to inform future learning.

## Examples of questions that illustrate the key concepts

The following table provides sample teacher/student questions that illustrate the key concepts, which may help to structure or frame an inquiry. These examples demonstrate broad, open-ended questioning—requiring investigation, discussion, and a full and considered response—that is essential in an inquiry-led programme. Further examples can be found in the *Mathematics scope and sequence* (2003) document.

Concept	Sample teacher/student questions
<b>Form</b> What is it like?	<ul style="list-style-type: none"> <li>• What is a pattern?</li> <li>• How can we describe these shapes?</li> <li>• What is a fraction?</li> <li>• How can we describe time?</li> </ul>
<b>Function</b> How does it work?	<ul style="list-style-type: none"> <li>• How does the scale on a graph work?</li> <li>• What happens if we keep adding?</li> <li>• What is each shape being used for?</li> <li>• How can we record time?</li> </ul>
<b>Causation</b> Why is it like it is?	<ul style="list-style-type: none"> <li>• Why is a block the best shape for building a tower?</li> <li>• Why do these calculations produce patterns?</li> <li>• What prompted people to develop a place value system?</li> <li>• Why was the data displayed in this form?</li> </ul>
<b>Change</b> How is it changing?	<ul style="list-style-type: none"> <li>• How can we convert from the 12-hour clock to the 24-hour clock?</li> <li>• How can you change one quadrilateral into another?</li> <li>• What do all patterns have in common?</li> <li>• What would happen to the area of something if...?</li> </ul>
<b>Connection</b> How is it connected to other things?	<ul style="list-style-type: none"> <li>• How can you use fractions to explain musical notation?</li> <li>• How are <math>4 + 3</math> and <math>3 + 4</math> connected?</li> <li>• What do you already know that helps you to read and interpret this display of data?</li> <li>• How is area connected to perimeter?</li> </ul>
<b>Perspective</b> What are the points of view?	<ul style="list-style-type: none"> <li>• Are there some different ways of explaining this?</li> <li>• Who might be interested in, or be able to use, the results of our survey?</li> <li>• How do people calculate in different cultures?</li> <li>• What would make this game fair to all players?</li> </ul>
<b>Responsibility</b> What is our responsibility?	<ul style="list-style-type: none"> <li>• What makes your answer reasonable?</li> <li>• Why does the measurement need to be accurate?</li> <li>• How have you collected all the relevant data?</li> </ul>

Concept	Sample teacher/student questions
<b>Reflection</b> How do we know?	<ul style="list-style-type: none"> <li>• How do you know that you are correct?</li> <li>• Which way works the best? Why?</li> <li>• What could you do differently if you repeated the survey?</li> <li>• Why are our estimates realistic?</li> </ul>

## Overall expectations in mathematics

The *Mathematics scope and sequence* (2003) document identifies the expectations considered appropriate in the PYP. These expectations (outlined here) are not a requirement of the programme, but it is recommended that schools undertake a careful consideration of their scope and sequence document in order to identify the overall expectations in mathematics for their students.

When developing a scope and sequence, a school should bear in mind the following.

If the school adapts, or develops, its own scope and sequence documents for each PYP subject area, the level of overall expectation regarding student achievement expressed in these documents at least matches that expressed in the PYP scope and sequence documents.

*Programme standards and practices: C1.23, IBO (2005)*

Full details of sample questions, activities and assessments related to these expectations can be found in the *Mathematics scope and sequence* (2003) document, available on the OCC.

### 3–5 years

#### Data handling: statistics and probability

Students will sort real objects by attributes, create graphs using real objects, and compare quantities. They will discuss and identify outcomes that will happen, that will not happen or that might happen.

#### Measurement

Students will identify and compare attributes of real objects, and events in their realm of experience.

#### Shape and space

Students will sort, describe and compare 3-D shapes, and explore the paths, regions and boundaries of their immediate environment and their position.

#### Pattern and function

Students will find, describe and create simple patterns in their world.

#### Number

Students will read, write, count, compare and order numbers to 20. They will model number relationships to 10, develop a sense of 1:1 correspondence and conservation of number. They will select and explain an appropriate method for solving a problem.

## 5–7 years

### **Data handling: statistics and probability**

Students will sort, label, collect, display and compare data in a variety of forms, including pictographs and bar graphs. They will understand the purpose of graphing data. They will discuss, identify, predict and place outcomes in order of likelihood.

### **Measurement**

Students will estimate, measure, label and compare using non-standard units of measurement, and they will understand why we use standard units of measurement to measure length, mass, time and temperature. They will read and write time to the hour, half hour and quarter hour, and they will identify and compare lengths of time (days, weeks and months).

### **Shape and space**

Students will describe the properties of 3-D shapes, including the 2-D shapes that can be seen, using mathematical vocabulary. They will find and explain symmetry in the immediate environment, and they will create symmetrical patterns. They will give and follow simple directions using left, right, forward and backward.

### **Pattern and function**

Students will describe, continue, create and compare patterns. They will recognize and extend patterns in number. They will identify commutative property. They will model the relationships in, and between, addition and subtraction.

### **Number**

Students will read, write, estimate, count, compare and order numbers to 100. They will read, write, model and understand addition and subtraction, using mathematical vocabulary and symbols. They will automatically use addition and subtraction facts to 10. They will explore multiplication and division using their own methods, use fraction names to describe part and whole relationships, and explore counting patterns. They will select and explain appropriate methods for solving a problem, and they will estimate the reasonableness of answers.

## 7–9 years

### **Data handling: statistics and probability**

Students will discuss, compare and create sets that have subsets; design a survey; and process and interpret the data on a bar graph where the scale represents larger quantities. They will manipulate information in a database. They will find, describe and explain the mode in a set of data, and they will use probability to determine the outcome of mathematically fair and unfair games.

### **Measurement**

Students will estimate, measure, label and compare length, mass, time and temperature using formal methods and standard units of measurement. They will determine appropriate tools and units of measurement including the use of small units of measurement for precision (cm, mm, °C). They will also estimate, measure, label and compare perimeter and area, using non-standard units of measurement. Students will model the addition and subtraction of money, and they will be able to read and write time to the minute and second.



**Shape and space**

Students will sort, describe and model regular and irregular polygons, including identifying congruency in 2-D shapes. They will combine and transfer 2-D shapes to create another shape. They will identify lines and axes of reflective and rotational symmetry, understand angles as a measure of rotation, and locate features on a grid using coordinates.

**Pattern and function**

Students will recognize, describe and analyse patterns in number systems. They will identify patterns and rules for multiplication and division, together with their relationship with addition and subtraction. They will model multiplication as an array and use number patterns to solve problems.

**Number**

Students will read, write, estimate, count, compare and order numbers to 1,000, extending understanding of the base 10 system to the thousands. They will read, write and model multiplication and division problems. They will use and describe multiple strategies to solve addition, subtraction, multiplication and division problems, reasonably estimating the answers. They will compare fractions using manipulatives, mathematical vocabulary and fractional notation. They will understand and model the concept of equivalence to one.

**9–12 years****Data handling: statistics and probability**

Students will collect, display and interpret data in a variety of ways. They will compare data displays, including how well they communicate information. They will create and manipulate an electronic database and set up a spreadsheet using simple formulas to create graphs. They will find, describe and explain the range, mode, median and mean in a set of data, and they will use a numerical probability scale 0–1 or 0–100%. They will determine the theoretical probability of an event and explain why this might be different from the experimental probability.

**Measurement**

Students will estimate, measure, label and compare perimeter, area and volume using formal methods and standard units of measurement. They will develop procedures for finding perimeter, area and volume, and they will recognize the relationship between them. They will use the correct tool for any measurement with accuracy. They will measure and construct angles in degrees using a protractor. They will know that the accuracy of measurement depends on the situation and the precision of the tools. They will use and construct 12-hour and 24-hour timetables, and they will be able to determine times worldwide.

**Shape and space**

Students will use the mathematical vocabulary of 2-D and 3-D shapes and angles. They will classify, sort and label all types of triangle and quadrilateral. They will turn a 2-D net into a 3-D shape and vice versa. They will find and use scale and ratio to enlarge and reduce shapes. They will use the language and notation of bearing to describe position, and they will be able to read and plot coordinates in four quadrants.

**Pattern and function**

Students will understand and use the relationships between the four operations (adding, subtracting, multiplying and dividing). They will model and explain number patterns and use real-life problems to create a number pattern following a rule. They will develop, explain and model simple algebraic formulas. They will model exponents as repeated multiplication, and they will understand and use exponents and roots as inverse functions.

## **Number**

Students will read, write and model numbers to 1 million and beyond, extending the base 10 system to the millions and thousands. They will automatically use number facts. They will read, write, model, compare and order fractions (including improper fractions and mixed numbers), decimals (to any given place), and percentages. They will interchange fractions, decimals and percentages. They will add and subtract fractions with related denominators, simplify fractions, and explore fractions using a calculator. They will add and subtract decimals to the thousandths and will model multiplication and division of decimals in the context of money. They will find and use ratios; read, write and model addition and subtraction of integers; and use exponential notation. They will use and describe multiple strategies to create and solve more complex problems, reasonably estimating the answers. They will select and defend the most appropriate and efficient method.

## Science in the Primary Years Programme

### Beliefs and values in science

Learning in science is fundamental to understanding the world in which we live and work.

*Science in the New Zealand Curriculum*, Ministry of Education (1997)

In the PYP, science is viewed as the exploration of the behaviours of, and the interrelationships among, the natural, physical and material worlds. Our understanding of science is constantly changing and evolving. The inclusion of science within the curriculum leads learners to an appreciation and awareness of the world as it is viewed from a scientific perspective. It encourages curiosity, develops an understanding of the world, and enables the individual to develop a sense of responsibility regarding the impact of their actions on themselves, others and their world.

Inquiry is central to scientific investigation and understanding. Students actively construct and challenge their understanding of the world around them by combining scientific knowledge with reasoning and thinking skills. Scientific knowledge is made relevant through its innumerable applications in the real world. The science process, by encouraging hands-on experience and inquiry, enables the individual to make informed and responsible decisions, not only in science but also in other areas of life.

In the PYP, the importance of science in an international curriculum is recognized as universal and transcends the boundaries of gender, cultural, linguistic and national biases. The inclusion of science within the curriculum develops an understanding of, and competence in using, the facilities of a rapidly changing scientific and technological world, while gaining a positive image of science and its contribution to the quality of life today. It also involves the development of an appreciation for the scientific contributions of people from various cultures and backgrounds.

The IB learner profile is integral to teaching and learning science in the PYP because it represents the qualities of effective learners and internationally minded students. The learner profile, together with the five essential elements of the programme—knowledge, concepts, skills, attitudes and action—informs planning, teaching and assessing in science.

### Good science practice

Science can be used to provide explanations and models of behaviour for phenomena and objects around us. It can also be used to investigate the interrelationships between the natural, physical and material worlds. The science component of the curriculum is considered to be driven by concepts and skills rather than by content. Science should be viewed as a way of thinking and a process that strives for balance between the construction of meaning and the acquisition of knowledge and skills.

The sample activities described in the *Science and technology scope and sequence* (2003) document are provided as a suggested way of including the transdisciplinary concepts and skills required. Teachers should regard these as prompts for developing suitable activities to address the central ideas of their units of inquiry. There is no single right way to plan scientific inquiry. Teachers should provide a range of opportunities and situations for students to investigate, and then guide them to make their investigations more effectual. These opportunities and situations should include a variety of external resources and settings as well as classroom-based work.

Structured, purposeful inquiry is the way in which students learn best, and the starting point should always be students' prior and current understanding. Students should be invited to investigate science by formulating their own questions, looking at the various means available to answer these questions, and proceeding with research, experimentation, observation and other means that will lead them to their own responses to the issues. The starting point has to be students' current understanding, and the goal is the active construction of meaning by building connections between students' experience and information and processes derived from the inquiry into new content.

It is suggested that the teacher's role in this process is to create an educational environment that encourages students to take responsibility, to the greatest possible extent, for their own science learning. This means that resources must be provided for each student to become involved in self-initiated inquiry. Commercially available resources for teaching science are carefully evaluated to ensure that they meet the requirements of the teacher, the students and the curriculum.

In the PYP classroom, the teacher facilitates the process of students becoming initiators rather than followers by asking carefully thought out, open-ended questions, and by encouraging students to ask questions of each other as well as of the teacher. It goes without saying that the teacher must also model and value inquiry.

Teachers can use the eight key concepts and related questions (presented later in this section) to guide their own inquiry. By engaging in inquiry themselves, teachers will not only achieve a deeper understanding of the scientific issues involved, but will also be a model for their students by assuming the role of "teacher as learner".

A PYP teacher's personal knowledge of science is of key importance. What teachers themselves understand shapes which resources they choose, what learning experiences they design and how effectively they teach. The teacher's own interest in, and development of, the discipline is maintained through regular professional development, reading of professional journals and, especially, through regular contact with colleagues who share their commitment to teaching science through inquiry.

## **The role of science in the programme of inquiry**

As science is relevant to all the transdisciplinary themes, all planned science learning should take place within the transdisciplinary units of the programme of inquiry. The fact that the science component of the curriculum is defined by the transdisciplinary themes means that schools often find that the subject-specific content in science will be reduced. Transdisciplinary learning that includes important science concepts will be increased. Examples of how this might be done can be found in the *PYP sample programme of inquiry with sample planners* (2005) and *Science and technology scope and sequence* (2003) document, both available on the OCC.

There may also be occasions that present themselves for student-initiated spontaneous inquiries that are not directly related to any planned science teaching.

Schools that have local and/or national curriculum requirements in science should articulate how best this predetermined knowledge (or skills) can be incorporated into their programme of inquiry to the fullest possible extent. They will need to plan how students can be encouraged to think scientifically, and promote this way of working throughout the curriculum and not just in the programme of inquiry.

If successful learning in science has taken place, students should be able to select key ideas and significant understanding from the data acquired for a unit of inquiry. They should be able to frame genuine, open-ended questions worthy of sustained research. As they conduct their inquiries, they should be able to provide accurate information and valid explanations. They should be able to identify possible causes of an issue, choose a solution and determine appropriate action to be taken. A willingness and ability to take action demonstrates evidence of learning. Through these processes, students should develop the habits and attitudes of successful lifelong learners.

## How science practices are changing

Structured, purposeful inquiry is the main approach to teaching and learning science in the PYP. However, it is recognized that many educational innovations (or, more accurately, educational reworkings) suffer from the advocacy of a narrow, exclusive approach. The PYP represents an approach to teaching that is broad and inclusive, in that it provides a context within which a wide variety of teaching strategies and styles can be accommodated, provided that they are driven by a spirit of inquiry and a clear sense of purpose.

The degree of change needed to teach science in this way will depend on the individual teacher. For those teachers who have grown weary of imposed change for which they see little point, it should be stressed that teachers are not expected to discard years of hard-earned skill and experience in favour of someone else's ideas on good teaching. It is suggested, rather, that teachers engage in reflection on their own practice, both individually and in collaboration with colleagues, with a view to sharing ideas and strengths, and with the primary aim of improving their teaching to improve student learning. In doing so, they will be modelling the skills and attitudes that have been identified as essential for students.

As an aid to reflection, the following set of subject-specific examples of good practice has been produced. It is believed that these examples are worthy of consideration by anyone committed to continuous improvement.

How are science practices changing?	
Increased emphasis on:	Decreased emphasis on:
hands-on activities to ensure that students experience and learn science process skills; high level of student involvement in a flexible learning environment	teacher demonstration and strict adherence to teacher-defined activities and direction of process
units of inquiry that lend themselves to transdisciplinary investigations	science lessons/units in isolation
challenging students to answer open-ended questions with investigations so that they can abandon/modify their misconceptions by observations, measurements or experimentation (teacher as facilitator)	the teacher as the sole authority for the correct answer or for disseminating information (teacher as expert)
a wider and responsible use of technology in all its forms as a tool for science learning	a limited use of technology as a tool for learning science or the teaching of an isolated group of skills
accepting uncertainty and ambiguity or more than one acceptable solution/hypothesis	finding pre-set answers

How are science practices changing?	
Increased emphasis on:	Decreased emphasis on:
more than one approach, model or process	one scientific model to approach investigations
discussion, dialogue, elaboration and interpretation of data gathered, with students proposing explanations and conclusions	written recording of data only; collecting and recording data as the sole purpose of an activity
challenging students to find applications for, and take action on, what they have learned	simply learning science facts and skills
instruction that recognizes that process and content are interdependent	separating instruction in scientific process and scientific content
providing students with the opportunities to explore a science interest when it arises	confining science to set times
a concept-driven curriculum using a wide variety of materials and manipulatives.	a textbook-driven curriculum using a limited range of science textbooks.

## Knowledge and skills in science

The science area of the PYP encompasses science and its applications. In the PYP, the science component of the curriculum should be driven by concepts and skills rather than by content. The key concepts identified in the “Concepts: what do we want students to understand?” section are inevitably influential in driving the curriculum, but there are many other related science concepts that provide further understanding of the subject area.

When schools develop their programme of inquiry, they should ensure that a breadth and balance of science content is covered through the units of inquiry. The central ideas a school develops should be directly reflected in the school’s scope and sequence documents. The *Science and technology scope and sequence* (2003) document identifies some central ideas that may be considered significant in the PYP. These central ideas are taken from the *PYP sample programme of inquiry with sample planners* (2005), available on the OCC.

In the following “Science strands” section, the knowledge component is arranged into four strands: **living things**, **Earth and space**, **materials and matter** and **forces and energy**. The four strands do not need to be taught each year, but there does need to be a balance throughout the programme of inquiry.

In addition to these strands, students will have the opportunity to identify and reflect on “big ideas” by making connections between the questions asked and the concepts that drive the inquiry. They will become aware of the relevance that these concepts have to all of their learning.

In **living things**, students inquire into issues related to themselves and their environment, while in **Earth and space**, students extend their inquiry to include the study of planet Earth and its relationship to the universe. The remaining strands, **materials and matter** and **forces and energy**, focus on the study of the origins, properties and uses of solids, liquids, gases and energy sources. These strands do not have fixed boundaries; many areas will necessarily overlap with each other and with other disciplines such as mathematics, social studies, and personal and social education (PSE). Students should be made aware of the inevitable links to other areas of the curriculum in order to understand the interconnected nature of the subject areas, with one another and with the transdisciplinary themes.

Science provides opportunities for students to engage in scientific investigations by making accurate observations, handling tools, recording and comparing data, and formulating explanations using their own scientific experiences and those of others. Students will gain experience in testing their own assumptions and thinking critically about the perspectives of others in order to develop further their own ideas.

All curriculum areas provide an opportunity to utilize the transdisciplinary skills identified in figure 8 in the “Skills: what do we want students to be able to do?” section. The science component of the curriculum also provides opportunities for students to:

- observe carefully in order to gather data
- use a variety of instruments and tools to measure data accurately
- use scientific vocabulary to explain their observations and experiences
- identify or generate a question or problem to be explored
- plan and carry out systematic investigations, manipulating variables as necessary
- make predictions and hypotheses
- interpret and evaluate data gathered in order to draw conclusions
- consider scientific models and applications (including their limitations)
- become confident and competent users of ICT in science learning.

## Science strands

### What do we want students to know?

#### Living things

The study of the characteristics, systems and behaviours of humans and other animals, and of plants; the interactions and relationships between and among them, and with their environment.

**Related concepts:** adaptation, animals, biodiversity, biology, classification, conservation, ecosystems, evolution, genetics, growth, habitat, homeostasis, organism, plants, systems (digestive, nervous, reproductive, respiratory).

#### Earth and space

The study of planet Earth and its position in the universe, particularly its relationship with the sun; the systems, distinctive features and natural phenomena that shape and identify the planet; the infinite and finite resources of the planet.

**Related concepts:** atmosphere, climate, erosion, evidence, geography, geology, gravity, renewable and non-renewable energy sources, resources, seasons, space, sustainability, systems (solar, water cycle, weather), tectonic plate movement, theory of origin.

#### Materials and matter

The study of the properties, behaviours and uses of materials, both natural and human-made; the origins of human-made materials and how they are manipulated to suit a purpose.

**Related concepts:** changes of state, chemical and physical changes, conduction and convection, density, gases, liquids, properties and uses of materials, solids, structures, sustainability.

**Forces and energy**

The study of energy, its origins, storage and transfer, and the work it can do; the study of forces; the application of scientific understanding through inventions and machines.

**Related concepts:** conservation of energy, efficiency, equilibrium, forms of energy (electricity, heat, kinetic, light, potential, sound), magnetism, mechanics, physics, pollution, power, technological advances, transformation of energy.

**Related concepts:** While the key concepts have been identified, related concepts could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Here, examples of some possible related concepts have been provided for each of the strands. Schools may choose to develop their own related concepts.

## Key concepts in the PYP: what do we want students to understand about science?

Central to the philosophy of the PYP is the principle that purposeful, structured inquiry is a powerful vehicle for learning that promotes meaning and understanding, and challenges students to engage with significant ideas. Hence in the PYP there is also a commitment to a **concept-driven curriculum** as a means of supporting that inquiry. There are clusters of ideas that can usefully be grouped under a set of overarching concepts, each of which has major significance within and across disciplines, regardless of time or place.

These key concepts are one of the essential elements of the PYP framework. It is accepted that these are not, in any sense, the only concepts worth exploring. Taken together, they form a powerful curriculum component that drives the teacher- and/or student-constructed inquiries that lie at the heart of the PYP curriculum.

When viewed as a set of questions, the concepts form a research tool that is manageable, open-ended and more readily accessible to students. It is these questions, used flexibly by teachers and students when planning an inquiry-based unit, that shape that unit, giving it direction and purpose.

The following table explains each concept from both the generic perspective and the science perspective; a full explanation of the key concepts is found in the “Concepts: what do we want students to understand?” section.

Concept	Generic perspective	Science perspective
<b>Form</b> What is it like?	Everything has a form with recognizable features that can be observed, identified, described and categorized.	Most things have a form or shape with an outward or visible manifestation and an internal structure.
<b>Function</b> How does it work?	Everything has a purpose, a role or a way of behaving that can be investigated.	The special activities, properties or purposes, natural or endowed, of a creature or thing.
<b>Causation</b> Why is it like it is?	Things do not just happen. There are causal relationships at work, and actions have consequences.	The effect brought about by an intended or unintended action or reaction.



Concept	Generic perspective	Science perspective
<b>Change</b> How is it changing?	Change is the process of movement from one state to another. It is universal and inevitable.	The concept of change, also described as transformation, is a pervasive concept in science. Change is an inevitable aspect of the physical world as things become different or pass from one form to another. It can be natural or brought about and accelerated by outside influences.
<b>Connection</b> How is it connected to other things?	We live in a world of interacting systems in which the actions of any individual element affect others.	The world is full of interacting systems that depend on each other to form a working whole.
<b>Perspective</b> What are the points of view?	Knowledge is moderated by perspectives. Different perspectives lead to different interpretations, understandings and findings. Perspectives may be individual, group, cultural or disciplinary.	Events and findings can be interpreted differently, depending on knowledge, experience and motives. The difference between empirically proven facts and supposition must be emphasized.
<b>Responsibility</b> What is our responsibility?	People make choices based on their understandings, and the actions they take as a result do make a difference.	We have a responsibility to the world in which we live. This involves being aware of how scientific knowledge can be used to improve or worsen the quality of life of all living things. Responsibility entails action as well as awareness.
<b>Reflection</b> How do we know?	There are different ways of knowing. It is important to reflect on our conclusions, to consider our methods of reasoning, and the quality and reliability of the evidence we have considered.	We must consciously reflect on, and be able to describe, how we gain our knowledge and develop our attitudes.

## Examples of questions that illustrate the key concepts

The following table provides sample teacher/student questions that illustrate the key concepts, which may help to structure or frame an inquiry. These examples demonstrate broad, open-ended questioning—requiring investigation, discussion, and a full and considered response—that is essential in an inquiry-led programme. Further examples can be found in the *Science and technology scope and sequence* (2003) document.

Concept	Sample teacher/student questions
<b>Form</b> What is it like?	<ul style="list-style-type: none"> <li>• What does it feel like?</li> <li>• Where do we get the food we eat?</li> <li>• If the Earth were cut in half between the North Pole and the South Pole, what would it look like on the inside?</li> <li>• What are the components of an ecosystem?</li> </ul>
<b>Function</b> How does it work?	<ul style="list-style-type: none"> <li>• What can you use shadows for?</li> <li>• How do seeds fit into the growth cycle of plants?</li> <li>• How is air being used around us?</li> <li>• What do reservoirs and purification plants do?</li> </ul>
<b>Causation</b> Why is it like it is?	<ul style="list-style-type: none"> <li>• How can you make a shadow?</li> <li>• Why are different foods processed in different ways?</li> <li>• How are houses around the world constructed to suit the local climate?</li> <li>• What causes the universal changes that occur during puberty?</li> </ul>
<b>Change</b> How is it changing?	<ul style="list-style-type: none"> <li>• How does the sand change from the morning to the afternoon?</li> <li>• What differences do you see in the growth of plants over time?</li> <li>• How do our bodies change when we exercise?</li> <li>• In what ways does air differ from place to place and over time?</li> </ul>
<b>Connection</b> How is it connected to other things?	<ul style="list-style-type: none"> <li>• What link is there between the time of day and the shadow your body makes?</li> <li>• Why are certain vehicles suitable for particular tasks?</li> <li>• How is the human life cycle the same as or different from that of other animals?</li> <li>• What are the similarities and differences between your local ecosystem and a larger ecosystem that you have researched?</li> </ul>
<b>Perspective</b> What are the points of view?	<ul style="list-style-type: none"> <li>• Do plants (or animals) in the classroom need to be taken care of in the same way? Why?</li> <li>• What are the different points of view supported by the evidence?</li> <li>• How does science explain the existence of the Earth, solar system and galaxy?</li> <li>• What are the implications for humans?</li> </ul>
<b>Responsibility</b> What is our responsibility?	<ul style="list-style-type: none"> <li>• What things should we do to care for our classroom plants and animals?</li> <li>• How can we make sure we do not waste water?</li> <li>• What factors do you need to consider when designing and making a vehicle?</li> <li>• What should we do to remain healthy?</li> </ul>

Concept	Sample teacher/student questions
<b>Reflection</b> How do we know?	<ul style="list-style-type: none"> <li>• How will we know when it is time to water the plants?</li> <li>• What do you think happens to your body during exercise and after exercise?</li> <li>• How has space exploration influenced our daily lives?</li> <li>• In what ways can we observe that our bodies are using air?</li> </ul>

## Overall expectations in science

The *Science and technology scope and sequence* (2003) document identifies the expectations considered appropriate in the PYP. It does this by looking at the central ideas included in the *PYP sample programme of inquiry with sample planners* (2005) and identifying the essential understandings included.

These expectations (outlined here) are not a requirement of the programme, but it is recommended that schools undertake a careful consideration of their scope and sequence document in order to identify the overall expectations in science for their students.

When developing a scope and sequence, a school should bear in mind the following.

If the school adapts, or develops, its own scope and sequence documents for each PYP subject area, the level of overall expectation regarding student achievement expressed in these documents at least matches that expressed in the PYP scope and sequence documents.

*Programme standards and practices: C1.23, IBO (2005)*

Full details of sample questions, activities and assessments related to these expectations can be found in the *Science and technology scope and sequence* (2003) document, available on the OCC.

### 3–5 years

Students will develop their observational skills by using their senses to gather and record information, and they will use their observations to identify simple patterns, make predictions and discuss their ideas. They will explore the way objects and phenomena function, and will recognize basic cause and effect relationships. Students will examine change over varying time periods and know that different variables and conditions may affect change. They will be aware of different perspectives, and they will show care and respect for themselves, other living things and the environment. Students will communicate their ideas or provide explanations using their own scientific experience and vocabulary.

### 5–7 years

Students will develop their observational skills by using their senses to gather and record information, and they will use their observations to identify patterns, make predictions and refine their ideas. They will explore the way objects and phenomena function, identify parts of a system, and gain an understanding of cause and effect relationships. Students will examine change over varying time periods, and will recognize that more than one variable may affect change. They will be aware of different perspectives and ways of organizing the world, and they will show care and respect for themselves, other living things and the environment. Students will communicate their ideas or provide explanations using their own scientific experience.

## **7–9 years**

Students will develop their observational skills by using their senses and selected observational tools. They will gather and record observed information in a number of ways, and they will reflect on these findings to identify patterns or connections, make predictions, and test and refine their ideas with increasing accuracy. Students will explore the way objects and phenomena function, identify parts of a system, and gain an understanding of increasingly complex cause and effect relationships. They will examine change over time, and will recognize that change may be affected by one or more variables. They will be aware of different perspectives and ways of organizing the world, and they will be able to consider how these views and customs may have been formulated. Students will use their learning in science to plan positive and realistic action in order to improve their welfare and that of other living things and the environment. Students will communicate their ideas or provide explanations using their own scientific experience and that of others.

## **9–12 years**

Students will develop their observational skills by using their senses and selected observational tools. They will gather and record observed information in a number of ways, and they will reflect on these findings to identify patterns or connections, make predictions, and test and refine their ideas with increasing accuracy. Students will explore the way objects and phenomena function, identify parts of a system, and gain an understanding of increasingly complex cause and effect relationships. They will examine change over time, and they will recognize that change may be affected by one or more variables. They will be aware of different perspectives and ways of organizing the world, and they will be able to consider how these views and customs may have been formulated. Students will use their learning in science to plan positive and realistic action in order to improve their welfare and that of other living things and the environment. Students will communicate their ideas or provide explanations using their own scientific experience and that of others.

## Social studies in the Primary Years Programme

### Beliefs and values in social studies

Social studies education aims to enable students to participate in a changing society as informed, confident, and responsible citizens.

*Social Studies in the New Zealand Curriculum*, Ministry of Education (1997)

In the PYP, social studies is viewed as the study of people in relation to their past, their present and their future, their environment and their society. Social studies encourages curiosity and develops an understanding of a rapidly changing world. Through social studies, students develop an understanding of their personal and cultural identities. They develop the skills and knowledge needed to participate actively in their classroom, their school, their community and the world: to understand themselves in relation to their communities.

The aim of social studies within the PYP is to promote intercultural understanding and respect for individuals and their values and traditions. In support of the IBO mission statement, the social studies component of the PYP curriculum will encourage students “to understand that other people, with their differences, can also be right”. Therefore, there is a strong emphasis on the reduction of prejudice and discrimination within the classroom, the school, the community and the world.

The IB learner profile is integral to teaching and learning social studies in the PYP because it represents the qualities of effective learners and internationally minded students. The learner profile, together with the five essential elements of the programme—knowledge, concepts, skills, attitudes and action—informs planning, teaching and assessing in social studies.

Exposure to and experience with social studies opens doors to key questions about life and learning. Evidence of student learning will be apparent in their willingness and ability to take action in order to make a difference in the world.

### Good social studies practice

In the PYP, a wide variety of strategies and learning experiences can be used to teach social studies, but the philosophy and pedagogy of the PYP should inform all planning, teaching and assessment of the subject. Decisions about content in social studies will be dependent on the school’s location, context and curriculum requirements. Through relating content to significant and universal concepts, common to all societies, times and places, the social studies component of the curriculum becomes international. Social studies teaching and learning takes place within the programme of inquiry.

Structured, purposeful inquiry is the way in which students learn best, and the starting point should always be students’ prior and current understanding. Teachers work with colleagues to plan authentic learning experiences that address the central idea and inquiry points of the unit. This collaboration enhances the transdisciplinary nature of the units. Resources are selected on the basis of the multiple perspectives that they present. Commercially available resources for teaching social studies are carefully evaluated to ensure they meet the requirements of the teacher, the students and the curriculum.

Learning that allows for a variety of learning styles and language levels is planned, encouraging students to ask and answer their own questions. Through their interaction with the resources and dialogue with each other, students consider different points of view, develop skills and attitudes, and gain knowledge and conceptual understanding. Students apply skills and concepts in new contexts, and transfer new skills and concepts to familiar contexts.

The social studies component of the curriculum provides opportunities for students to:

- learn how to ask compelling and relevant questions that can be researched
- gain a secure understanding of their own identity and their place in the world
- develop an understanding of other cultural groups and an appreciation of other ideas and beliefs
- gain knowledge that is of genuine importance in understanding the human condition through the exploration of themes that have significance for all students in all cultures
- gain conceptual understanding through participating in learning experiences that foster sensitivity, creativity and initiative, leading to socially responsible action
- gain a sense of time and place in relation to their own experience and the experience of other people
- gain an understanding of humankind's role in, and dependence on, the natural and constructed world, and learn to apply this knowledge in responsible ways.

As a result of their learning, students share with each other and take action. Students and teachers develop and define clear criteria with which the process and product will be assessed.

A PYP teacher's personal knowledge of social studies is of key importance. What teachers themselves understand shapes which resources they choose, what learning experiences they design and how effectively they teach. The teacher's own interest in, and development of, the discipline is maintained through regular professional development, reading of professional journals and, especially, through regular contact with colleagues who share their commitment to teaching social studies through inquiry.

## **The role of social studies in the programme of inquiry**

As social studies is relevant to all the transdisciplinary themes, all planned social studies learning should take place within the transdisciplinary units of the programme of inquiry. The fact that the social studies component of the curriculum is defined by the transdisciplinary themes means schools often find that the subject-specific content in social studies will be reduced. Transdisciplinary learning that includes important social studies concepts will be increased. Examples of how this might be done can be found in the *PYP sample programme of inquiry with sample planners* (2005) and *Social studies scope and sequence* (2003) document, both available on the OCC.

There may also be occasions that present themselves for student-initiated spontaneous inquiries that are not directly related to any planned social studies teaching.

Schools that have local and/or national curriculum requirements in social studies should articulate how best this predetermined knowledge (or skills) can be incorporated into their programme of inquiry to the fullest possible extent.

If successful learning in social studies has taken place, students should be able to select key ideas and significant understanding from the data acquired for a unit of inquiry. They should be able to frame genuine, open-ended questions worthy of sustained research. As they conduct their inquiries, they should be able to provide accurate information and valid explanations. They should be able to identify the possible causes of an issue, choose a solution and determine appropriate action to be taken. A willingness and ability to take action demonstrates evidence of learning. Through these processes, students should develop the habits and attitudes of successful lifelong learners.

## How social studies practices are changing

Structured, purposeful inquiry is the main approach to teaching and learning social studies in the PYP. However, it is recognized that many educational innovations (or, more accurately, educational reworkings) suffer from the advocacy of a narrow, exclusive approach. The PYP represents an approach to teaching that is broad and inclusive, in that it provides a context within which a wide variety of teaching strategies and styles can be accommodated, provided that they are driven by a spirit of inquiry and a clear sense of purpose.

The degree of change needed to teach social studies in this way will depend on the individual teacher. For those teachers who have grown weary of imposed change for which they see little point, it should be stressed that teachers are not expected to discard years of hard-earned skill and experience in favour of someone else's ideas on good teaching. It is suggested, rather, that teachers engage in reflection on their own practice, both individually and in collaboration with colleagues, with a view to sharing ideas and strengths, and with the primary aim of improving their teaching to improve student learning. In doing so, they will be modelling the skills and attitudes that have been identified as essential for students.

As an aid to reflection, the following set of subject-specific examples of good practice has been produced. It is believed that these examples are worthy of consideration by anyone committed to continuous improvement.

How are social studies practices changing?	
Increased emphasis on:	Decreased emphasis on:
a coherent, articulated school-wide programme of inquiry, based on agreed significant and relevant contents	topics chosen by individual teachers; favourite topics; topics that have always been done in the grade level or that are well resourced
using multiple sources and presenting multiple perspectives (global, social, cultural and gender)	relying on single sources and presenting narrow perspectives (national, religious, political, stereotypical)
planning units of inquiry that lend themselves to transdisciplinary investigations across the areas of the curriculum	planning units based on single disciplines such as history, geography or society
planning units that build in local, multicultural and global dimensions	planning units that focus on Western civilization and the developed world
using a variety of primary social studies sources and documentation (people, artifacts, field trips, surveys and interviews) as well as sources such as media and technology	textbooks and worksheets as the predominant resources in social studies
factual information as a vehicle to conceptual development within units of inquiry that focus on students constructing meaning, and expanding and deepening their knowledge and understanding of the world	factual information (such as dates and names of people or countries) as an end in itself
empowering students to be responsible and to take action in our world today.	teaching about responsibility and the need for action in our world today.

## Knowledge and skills in social studies

Social studies aims to guide students and teachers towards a deeper understanding of themselves and others, and of their place in an increasingly global society. It provides opportunities for students to look at and think about human behaviour and activity realistically, objectively, and with sensitivity. It is essentially about people: how they think, feel and act; how they interact with others; their beliefs, aspirations and pleasures; the problems they have to face; how and where they live (or lived); how they interact with their environment; the work they do; and how they organize themselves.

All curriculum areas provide an opportunity to utilize the transdisciplinary skills identified in figure 8 in the “Skills: what do we want students to be able to do?” section. The social studies component of the curriculum also provides opportunities for students to:

- formulate and ask questions about the past, the future, places and society
- draw information from, and respond to, stories about the past from geographical and societal sources
- use and analyse evidence from a variety of historical, geographical and societal sources
- sequence in chronological order
- orientate in relation to place and time
- identify roles, rights and responsibilities in society
- assess the accuracy, validity and possible bias of sources.

The *Social studies scope and sequence* (2003) document identifies some of the central ideas considered significant in the PYP. Here, the content is arranged into five strands: **human systems and economic activities, social organization and culture, continuity and change through time, human and natural environments and resources and the environment**. Although these strands are considered separately, in practice they are inextricably linked. Students should be made aware of the inevitable links to other areas of the curriculum in order to understand the interconnected nature of the subject areas, with one another and with the transdisciplinary themes.

## Social studies strands

### What do we want students to know?

#### **Human systems and economic activities**

The study of how and why people construct organizations and systems; the ways in which people connect locally and globally; the distribution of power and authority.

**Related concepts:** communications, conflict, cooperation, education, employment, freedom, governments, justice, legislation, production, transportation, truth.

#### **Social organization and culture**

The study of people, communities, cultures and societies; the ways in which individuals, groups and societies interact with each other.

**Related concepts:** artifacts, authority, citizenship, communication, conflict, diversity, family, identity, networks, prejudice, religion, rights, roles, traditions.



**Continuity and change through time**

The study of the relationships between people and events through time; the past, its influences on the present and its implications for the future; people who have shaped the future through their actions.

**Related concepts:** chronology, civilizations, conflict, discovery, exploration, history, innovation, migration, progress, revolution.

**Human and natural environments**

The study of the distinctive features that give a place its identity; how people adapt to and alter their environment; how people experience and represent place; the impact of natural disasters on people and the built environment.

**Related concepts:** amenities, borders (natural, social and political), dependence, geography, impact, landscape, locality, ownership, population, regions, settlements.

**Resources and the environment**

The interaction between people and the environment; the study of how humans allocate and manage resources; the positive and negative effects of this management; the impact of scientific and technological developments on the environment.

**Related concepts:** conservation, consumption, distribution, ecology, energy, interdependence, pollution, poverty, sustainability, wealth.

**Related concepts:** While the key concepts have been identified, related concepts could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Here, examples of some possible related concepts have been provided for each of the strands. Schools may choose to develop their own related concepts.

## Key concepts in the PYP: what do we want students to understand about social studies?

Central to the philosophy of the PYP is the principle that purposeful, structured inquiry is a powerful vehicle for learning that promotes meaning and understanding, and challenges students to engage with significant ideas. Hence in the PYP there is also a commitment to a concept-driven curriculum as a means supporting that inquiry. There are clusters of ideas that can usefully be grouped under a set of overarching concepts, each of which has major significance within and across disciplines, regardless of time or place.

These key concepts are one of the essential elements of the PYP framework. It is accepted that these are not, in any sense, the only concepts worth exploring. Taken together, they form a powerful curriculum component that drives the teacher- and/or student-constructed inquiries that lie at the heart of the PYP curriculum.

When viewed as a set of questions, the concepts form a research tool that is manageable, open-ended and more readily accessible to students. It is these questions, used flexibly by teachers and students when planning an inquiry-based unit, that shape that unit, giving it direction and purpose.

The following table explains each concept from both the generic perspective and the social studies perspective; a full explanation of the key concepts is found in the “Concepts: what do we want students to understand?” section.

Concept	Generic perspective	Social studies perspective
<b>Form</b> What is it like?	Everything has a form with recognizable features that can be observed, identified, described and categorized.	The recognizable features of individuals, groups, historical periods and environments.
<b>Function</b> How does it work?	Everything has a purpose, a role or a way of behaving that can be investigated.	The workings of the events, systems and relationships in societies and the natural world.
<b>Causation</b> Why is it like it is?	Things do not just happen. There are causal relationships at work, and actions have consequences.	The causes and effects of human and natural events.
<b>Change</b> How is it changing?	Change is the process of movement from one state to another. It is universal and inevitable.	The nature of human, societal and environmental change over time.
<b>Connection</b> How is it connected to other things?	We live in a world of interacting systems in which the actions of any individual element affect others.	The interactions that affect humans and the environment; the ways in which our past, present and future are all connected.
<b>Perspective</b> What are the points of view?	Knowledge is moderated by perspectives. Different perspectives lead to different interpretations, understandings and findings. Perspectives may be individual, group, cultural or disciplinary.	The ways in which humans connect knowledge and experience that lead to diverse understanding.
<b>Responsibility</b> What is our responsibility?	People make choices based on their understandings, and the actions they take as a result do make a difference.	People's individual and collective responsibility towards themselves, groups and the environment.
<b>Reflection</b> How do we know?	There are different ways of knowing. It is important to reflect on our conclusions, to consider our methods of reasoning, and the quality and reliability of the evidence we have considered.	The learning from this inquiry, and ways in which the learner can apply their new understanding.

## Examples of questions that illustrate the key concepts

The following table provides sample teacher/student questions that illustrate the key concepts, which may help to structure or frame an inquiry. These examples demonstrate broad, open-ended questioning—requiring investigation, discussion, and a full and considered response—that is essential in an inquiry-led programme. Further examples can be found in the *Social studies scope and sequence* (2003) document.

Concept	Sample teacher/student questions
<b>Form</b> What is it like?	<ul style="list-style-type: none"> <li>• What kinds of work did people do?</li> <li>• What are the main occupations of people living in the town?</li> <li>• What is the landscape like?</li> </ul>
<b>Function</b> How does it work?	<ul style="list-style-type: none"> <li>• What rules of behaviour did people adopt?</li> <li>• How have people adapted to living here?</li> <li>• How do people celebrate?</li> <li>• What happens to waste?</li> </ul>
<b>Causation</b> Why is it like it is?	<ul style="list-style-type: none"> <li>• What motivated individuals or groups to act the way they did?</li> <li>• What caused certain cultures to disappear?</li> <li>• Why did people settle here?</li> <li>• In what ways have conflict and its resolution shaped the society?</li> </ul>
<b>Change</b> How is it changing?	<ul style="list-style-type: none"> <li>• Why did things change the way they did?</li> <li>• In what ways does the built environment result from the natural environment?</li> <li>• What is the role of technology in shaping the society?</li> <li>• How has technology modified the natural environment?</li> <li>• What societal factors cause growth, migration or resource management?</li> </ul>
<b>Connection</b> How is it connected to other things?	<ul style="list-style-type: none"> <li>• What, if any, connections exist between society then and society today?</li> <li>• When a connection between two or more peoples existed, how equitable and just was it?</li> <li>• How have natural disasters affected the lives of people?</li> <li>• What kinds of beliefs, values and attitudes encourage connections with other peoples?</li> </ul>
<b>Perspective</b> What are the points of view?	<ul style="list-style-type: none"> <li>• How do people decide on who they want as a leader?</li> <li>• Might this opinion be biased? Why?</li> <li>• Why do people have different points of view about preserving the environment?</li> <li>• What might my lifestyle be if I lived in another culture?</li> </ul>

Concept	Sample teacher/student questions
<b>Responsibility</b> What is our responsibility?	<ul style="list-style-type: none"> <li>• Why should we care about the past?</li> <li>• How can we act to prevent further damage to the natural environment?</li> <li>• What does it mean to be a world citizen?</li> <li>• What rights should all children have all over the world?</li> <li>• How is conflict resolved?</li> </ul>
<b>Reflection</b> How do we know?	<ul style="list-style-type: none"> <li>• What makes one historical source better than another?</li> <li>• What stereotypes do we have about this place?</li> <li>• Which primary sources have we used to gather data?</li> <li>• How reliable are own opinions and those of others?</li> </ul>

## Overall expectations in social studies

The *Social studies scope and sequence* (2003) document identifies the expectations considered appropriate in the PYP. It does this by looking at the central ideas included in the *PYP sample programme of inquiry with sample planners* (2005) and identifying the essential understandings included.

These expectations (outlined here) are not a requirement of the programme, but it is recommended that schools undertake a careful consideration of their scope and sequence document in order to identify the overall expectations in social studies for their students.

When developing a scope and sequence, a school should bear in mind the following.

If the school adapts, or develops, its own scope and sequence documents for each PYP subject area, the level of overall expectation regarding student achievement expressed in these documents at least matches that expressed in the PYP scope and sequence documents.

*Programme standards and practices: C1.23, IBO (2005)*

Full details of sample questions, activities and assessments related to these expectations can be found in the *Social studies scope and sequence* (2003) document, available on the OCC.

### 3–5 years

Students will gain an understanding of people and their lives, focusing on themselves, their friends and families, and their immediate environment. They will gain an increasing awareness of themselves in relation to the various groups to which they belong. They will gain a sense of place, and the reasons why particular places are important to people. They will also gain a sense of time, and recognize important events in their own lives, and how time and change affect people.

### 5–7 years

Students will gain an understanding of their world, focusing on themselves, their friends and families and their environment. They will appreciate the reasons why people belong to groups, the roles they fulfill and the different ways that people interact within groups. They will gain a sense of place and the reasons why particular places are important to people, as well as how and why people's activities influence, and are

influenced by, the places in their environment. They will gain a sense of time, recognizing important events in their own lives, and how time and change affect people.

### **7–9 years**

Students will extend their understanding of human society, focusing on themselves and others within their own community as well as other communities that are distant in time and place. They will investigate how and why groups are organized within communities, and the ways in which communities reflect the cultures and customs of their people. They will deepen their understanding of how people influence, and are influenced by, the places in their environment. Students will gain an appreciation of the relationship between valuing the environment and protecting it. They will extend their understanding of time, recognizing important events in people's lives, and how the past is recorded and remembered in different ways.

### **9–12 years**

Students will investigate aspects of human society, focusing on themselves and others within their own community as well as groups of people that are distant in time and place. They will extend their understanding of how and why groups are organized within communities, and how participation within groups involves both rights and responsibilities. Students will gain an appreciation of how cultural groups may vary in their customs and practices but reflect similar purposes. They will deepen their understanding of how people influence, and are influenced by, places in the environment. They will appreciate the significance of developing a sense of belonging and stewardship towards the environment, valuing and caring for it, in the interests of themselves and future generations. They will extend their understanding of time, recognizing how ideas and actions of people in the past have changed the lives of others, and appreciating how the past is recorded and remembered in different ways. They will gain an understanding of how and why people manage resources, and why different systems for the exchange of goods and services have developed.

## Personal, social and physical education in the Primary Years Programme

### Beliefs and values in personal, social and physical education

Personal, social and physical education (PSPE) is concerned with the development of knowledge, attitudes and skills related to personal, social and physical well-being in order to make healthy lifestyle choices. The IB learner profile is integral to teaching and learning PSPE in the PYP because it represents the qualities of effective learners and internationally minded students. The learner profile, together with the five essential elements of the programme—knowledge, concepts, skills, attitudes and action—informs planning, teaching and assessing in PSPE.

While there are relationships between the personal, social and physical aspects of the subject area, it is also recognized that the areas of **personal and social education** (PSE) and **physical education** (PE) have their own unique characteristics, which are outlined below.

#### Personal and social education

PSE is concerned with the ongoing development and growth of the individual in respect to feelings, beliefs and behaviours, and how they interrelate. It also considers the interaction of the individual within the family, school, community, society and the world at large. The PSE component of the curriculum provides a framework and vocabulary with which students can build relationships with peers and adults, make connections, and develop values and beliefs.

PSE is included in the curriculum in order to help students develop an understanding of how to manage and communicate their feelings; understand how their choices and practices can promote and maintain their health and safety; develop an awareness of social norms and perspectives; build relationships and develop an appreciation of commonalities and differences; develop strategies to resolve conflicts; recognize their rights and responsibilities towards others and the environment; and develop self-management strategies to become a successful learner. PSE learning takes place to ensure that cultural contexts can be appreciated, and wider perspectives can be embraced.

PSE is always transdisciplinary in nature; it is pervasive in every subject area, and has a special role to play in students' development.

[PSE] is not a subject as such, because only certain aspects of it can be taught in lessons. It is concerned with pupils' all round development as individuals in society, and is important as the foundation for learning in the widest sense.

*Standards and Quality in Personal and Social Education in Primary and Secondary Schools in Wales*, ESTYN—Schools inspection service in Wales  
(2002) © Crown copyright

## Physical education

PE has an important role to play in various aspects of human development: physical, social, personal and emotional. PE develops these aspects by giving students the opportunity to learn about movement and through movement. Students experience a wide variety of physical activities to help develop their movement skills. Through these activities, students can increase their confidence and cooperative skills. They develop an understanding of the role of physical activity in a healthy lifestyle in order to make informed choices, and the cultural significance of physical activities for communities and individuals.

PE helps to build links with parents, the local community and beyond. It is often an area that is especially important for students with diagnosed specific learning needs because they are often able to participate fully in PE activities in a way they are unable to in other areas of the curriculum.

## Good PSPE practice

Students learn best when PSPE is an integral part of their everyday life at school and at home. PSPE is an essential part of the curriculum and, as students engage with it across and between the disciplines, they come to a deeper understanding of its relevance and applicability to their everyday lives. Appropriate attitudes and behaviours are also modelled within the school and the school community. Students learn best when the activities they are given provide them with the motivation to achieve their personal goals. The activities should be varied and adjusted to the level of the students involved. PSPE promotes transdisciplinary learning through the transdisciplinary themes, the learner profile and the essential elements of the programme. Schools that have local and/or national curriculum requirements should articulate how best these can be incorporated into their planning, teaching and assessing of PSPE.

## Personal and social education

Including PSE in an integrated approach to the curriculum guides the students' learning process in all the disciplines and beyond school. This approach provides opportunities for collective and coordinated implementation that can be communicated, understood and undertaken by the whole school community.

To be effective, PSE is thoroughly planned and yet needs to have the flexibility to include spontaneous student-driven inquiries, allowing an opportunity for interaction between teachers and students that may not be achieved in other areas of the curriculum. PSE also offers an effective vehicle for opening up healthy dialogue between school and home. In this way, school and home may function as partners in education, making learning more relevant to the child and, therefore, more effective and enduring.

As stories are an integral part of the PSE component of the curriculum, carefully selected books are read as an introduction to new areas or as a way of starting discussions. Many of the attributes of the learner profile are clearly visible in a range of children's literature, and students are encouraged to recognize these attributes, as well as the attitudes, in the characters of the books selected.

## Physical education

Students are exposed to a wide variety of physical and health-related activities and experiences so that they can make informed choices throughout their lives. Good practice in PE includes activities in a variety of large- and small-group settings.

Students participate in movement activities using equipment or apparatus to develop a range of skills, both transdisciplinary and those specific to PE. Students of all abilities are challenged to improve their PE skills, but they are also supported and encouraged to enjoy physical activity and see it as part of a healthy and active lifestyle with connections to other areas of the curriculum and community.

PE promotes transdisciplinary learning through the key concepts, the learner profile and the attitudes. Students have the opportunity to identify and reflect on “big ideas” by making connections between the questions asked and the concepts that drive the inquiry. Concepts drive the PE component of the curriculum, with inquiry-based learning playing a significant role in developing students’ understanding.

## The role of PSE and PE in the programme of inquiry

The pervasive nature of PSE means that it needs to be considered in all areas of the curriculum and not just in the transdisciplinary units of inquiry. PSE can be an extremely effective way of getting students to understand the transdisciplinary themes in a way that other subject areas may not be able to.

Units of inquiry that are planned carefully to include PSE present students with the opportunity to bring current and personal issues into the curriculum. Examples of how PSE might be included into the units of inquiry can be found in the *PYP sample programme of inquiry with sample planners* (2005) and scope and sequence documents.

In PE, links should be made with the school’s programme of inquiry whenever possible and appropriate. PE teachers may use a number of the following models to teach their subject area within the PYP.

- **Integrating or supporting a unit within the programme of inquiry:** Whenever appropriate, PE teachers should be involved in collaborative planning to design and teach the units of inquiry.
- **Preparing for or following on from a unit within the programme of inquiry:** The direct teaching of PE in a unit of inquiry may not always be feasible but, where appropriate, introductory or follow-up activities may be useful to help students make connections between the different aspects of the curriculum. PE teachers plan and teach activities or experiences that prepare students for participation in a unit of inquiry. Following on from a unit, students may demonstrate their understanding of the central idea in a PE activity.
- **Independent inquiry:** There are times when PE teachers will be teaching their subject area independently using purposeful inquiry. At such times, teachers should structure their teaching and learning through the use of the learner profile, the transdisciplinary themes and central ideas. Teachers should still ensure that authentic connections are made while maintaining the integrity and essential character of the discipline.
- **Skills-based teaching:** This refers to the teaching of subject-specific skills not directly related to a unit of inquiry but required for the development of students’ understanding. If undertaking a skills-based lesson outside the programme of inquiry, PE teachers should still recognize that the same philosophy and pedagogy must underpin their planning and teaching of the subject.

## How PSPE practices are changing

Structured, purposeful inquiry is the main approach to teaching and learning PSPE in the PYP. However, it is recognized that many educational innovations (or, more accurately, educational reworkings) suffer from the advocacy of a narrow, exclusive approach. The PYP represents an approach to teaching that is broad and inclusive, in that it provides a context within which a wide variety of teaching strategies and styles can be accommodated, provided that they are driven by a spirit of inquiry and a clear sense of purpose.

The degree of change needed to teach PSPE in this way will depend on the individual teacher. For those teachers who have grown weary of imposed change for which they see little point, it should be stressed that teachers are not expected to discard years of hard-earned skill and experience in favour of someone else’s ideas on good teaching. It is suggested, rather, that teachers engage in reflection on their own practice, both individually and in collaboration with colleagues, with a view to sharing ideas and strengths, and with



the primary aim of improving their teaching to improve student learning. In doing so, they will be modelling the skills and attitudes that have been identified as essential for students.

As an aid to reflection, the following sets of subject-specific examples of good practice have been produced. It is believed that these examples are worthy of consideration by anyone committed to continuous improvement.

How are PSE practices changing?	
Increased emphasis on:	Decreased emphasis on:
concept-driven and transdisciplinary teaching taking place both inside and outside the programme of inquiry	teaching an isolated subject or topic
every teacher as a PSE teacher	the class/homeroom teacher as the sole PSE teacher
flexible courses of study that can include issues initiated by the students	rigid, set courses of study
different cultural, religious or social perspectives celebrating differences	one cultural, religious or social perspective
PSE activities taking place throughout the school	PSE activities taking place only inside the classrooms
parents' involvement in PSE activities and issues	parents not being informed about PSE issues or not being invited to participate in PSE activities
empowering students to be responsible and to take action, with the teacher modelling behaviour	teaching about responsibility and the need to take action
discovering students' prior or existing beliefs, questions and concerns	instruction based on grade levels and preparation for the next academic year
challenging students to find applications for, and take action on, what they have learned	students simply learning facts and skills
the idea that what is/feels right for one person is not always right for another.	the idea that one answer/feeling is right for everyone.

How are PE practices changing?	
Increased emphasis on:	Decreased emphasis on:
learning that focuses on students constructing meaning, and expanding and deepening their knowledge of concepts and their understanding of the world	skill acquisition, a game or a sport as an end in itself
PE teachers viewed (and viewing themselves) as PYP teachers	PE teachers seen as solely single-subject teachers
skills learned, practised and applied in the context of inquiry	skills learned and practised in isolation

How are PE practices changing?	
Increased emphasis on:	Decreased emphasis on:
rigorous activities directly linked to the concepts and the driving questions of the inquiry	activities of superficial value; activities that are included only because they are fun
development of cooperative skills	acquisition of physical skills
engaging students at their own level	activities favouring skilled students
assessment/achievement based on learner profiles and attitudes.	assessment/achievement based on skill level.

## Knowledge and skills in PSE

PSE provides the models, processes and vocabulary for handling social and personal issues, and ensuring health and well-being. Students are prepared to address moral issues in their lives and act upon a set of positive values such as appreciation, empathy and respect. They should be given guidance to help develop positive attitudes and behaviours in order to meet challenges, make healthy lifestyle choices, and serve as responsible, respectful members of society. This guidance should be specific, explicit and continuous, and should take place in a non-threatening environment.

The *PSE scope and sequence* (2003) document identifies some central ideas that can be considered significant in the PYP. These central ideas are taken from the *PYP sample programme of inquiry with sample planners* (2005), available on the OCC. Due to the nature of the discipline, PSE should be included throughout the curriculum wherever applicable, in addition to opportunities found in units of the programme of inquiry. When schools use their own programme of inquiry, they should ensure that a breadth and balance of PSE content is covered through the units of inquiry.

The PSE knowledge component is arranged into four strands: **self-concept, health and safety, interaction with others** and **organization for learning**. Although these strands are considered separately, in practice they are inextricably linked. Students develop aspects of PSE continually, across the strands, through different disciplines and at their own pace.

All curriculum areas provide an opportunity to utilize the transdisciplinary skills identified in figure 8 in the “Skills: what do we want students to be able to do?” section. The PSE component of the curriculum also provides opportunities for students to:

- reflect on their own personal and social development
- recognize the commonalities and differences in personal and social development, both in their peers and in others around the world
- develop a suitable vocabulary to deal with the issues and relationships they will encounter
- approach new and sometimes challenging situations within a safe environment.

## PSE strands

### What do we want students to know?

#### Self-concept

An understanding of one's own beliefs, attitudes and feelings; the recognition of strengths and weaknesses; the extent to which students value themselves affects what they do and how they interact with others; the strategies for coping with, communicating about, and managing feelings.

**Related concepts:** beliefs, communication, differences, diversity, feelings, interdependence, opinion, perspectives, prejudice, similarities, trust, values.

#### Health and safety

Aspects of overall health, including nutrition and control of diseases; positive lifestyle choices to promote and maintain health; safe practices and environmentally responsible behaviours used in the home, school and community.

**Related concepts:** balance, choice, growth, nutrition, risk-taking, well-being.

#### Interaction with others

The social norms and values within the family, the school community and society, including the study and acceptance of cultural, racial and religious similarities and differences; an understanding of conflict and appropriate ways of dealing with it; an appreciation of the environment and the different ways to take care of it.

**Related concepts:** acceptance, communication, community, conflict, conservation, culture, democracy, environment, equity, family, friendship, relationships, religion, roles, stereotype, tradition.

#### Organization for learning

The strategies required in becoming a successful learner, including the adoption of a positive attitude towards responsibilities; making independent choices in relation to learning.

**Related concepts:** attitudes, behaviour, consequences, goals, initiative, independence, responsibilities, rights.

**Related concepts:** While the key concepts have been identified, related concepts could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Here, examples of some possible related concepts have been provided for each of the strands. Schools may choose to develop their own related concepts.

## Knowledge and skills in PE

PE involves human movement in relation to the physical environment. It is concerned with learning about physical activity and through physical activity. PE offers students the opportunity to discover the capabilities of their bodies and the variety of ways in which they are able to use their bodies to solve problems, address physical challenges, function as part of a group, manipulate equipment or apparatus, and express themselves in a range of situations. Through movement, students develop personally, socially and emotionally as well as physically. They learn to understand and accept their own strengths and weaknesses in PE.

The PE knowledge component is arranged into six strands: **health-related activities, body control and spatial awareness, athletic activities, games, movement to music** and **adventure challenge**. Within each of these interconnected strands, a balance should be struck between students' acquisition of knowledge and skills, and the development of conceptual understanding. In the *PE scope and sequence* (2003) document, gymnastics appears as a separate strand; here, it has been incorporated into athletic activities.

Students will be exposed to a number of activities that will develop motor skills, which may later be applied in various physical activities within and beyond the school setting. They will become aware of a number of positive leisure-time pursuits. In PE, students are exposed to a wide variety of physical and health-related activities and experiences so that they can make informed choices throughout their lives.

Students are encouraged to participate in an active lifestyle, and recognize the ways exercise affects their bodies and their overall fitness or well-being, developing an understanding of the role of physical activity in a healthy lifestyle. Students also come to recognize that PE takes place within a cultural context that should be appreciated. PE offers students the opportunity to set themselves physical objectives, gaining pleasure or satisfaction from accomplishing these physical tasks or challenges and reflecting on their performance.

All curriculum areas provide an opportunity to utilize the transdisciplinary skills identified in figure 8 in the "Skills: what do we want students to be able to do?" section. The PE component of the curriculum also provides opportunities for students to:

- learn about body control and spatial awareness
- master new skills and techniques in a variety of physical activities
- manipulate equipment or apparatus
- recognize the importance of fair play
- understand how strategies can assist when participating in physical activities
- use cooperative behaviours in order to function as part of a group or team
- use proper safety precautions when engaging in physical activities.

## PE strands

### What do we want students to know?

#### Health-related activities

Recognizing and appreciating the importance of physical activity and maintaining a healthy lifestyle; aspects of nutrition and exercise, together with a consideration of safety; physical changes, both temporary and long term, caused by physical activity.

**Related concepts:** development, diversity, energy, growth, norms, opinion.

#### Body control and spatial awareness

The human body's capacity of movement; moving around and in between objects and other individuals safely; manipulating equipment or apparatus using various body parts.

**Related concepts:** balance, body form, body parts, body tension, flow, movement, space.

<b>Athletic activities</b>	<p>Basic motor skills and the body's capacity for movement through manipulative, locomotor and balance exercises; the techniques, rules and purpose of a range of athletic activities (for example, track and field, gymnastics, swimming, skating, skiing); recognizing a high level of achievement and how to make efforts to improve a performance.</p> <p><b>Related concepts:</b> endurance, fitness, flexibility, levels, power, speed, strength.</p>
<b>Games</b>	<p>The rules, strategies, skills and techniques of a variety of games; problem solving, verbal and non-verbal communication, cooperative and self-management skills required.</p> <p><b>Related concepts:</b> action/reaction, attack (offence), defence, goals, possession.</p>
<b>Movement to music</b>	<p>Moving in response to music, sounds or situations; conveying feelings or emotions through movement; recognizing different types and purposes of dance, different techniques, patterns and steps; watching and performing different forms of dance.</p> <p><b>Related concepts:</b> flow, movement, patterns, sequences, shapes, tradition, weight transfer.</p>
<b>Adventure challenge</b>	<p>A variety of tasks requiring physical and critical thinking skills; challenges, some of which require apparatus, requiring groups to work together collaboratively in order to solve problems and accomplish a common goal.</p> <p><b>Related concepts:</b> conflict, cooperation, equity, initiative, pride, teamwork, trust.</p>

**Related concepts:** While the key concepts have been identified, related concepts could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Here, examples of some possible related concepts have been provided for each of the strands. Schools may choose to develop their own related concepts.

## Key concepts in the PYP: what do we want students to understand about PSPE?

Central to the philosophy of the PYP is the principle that purposeful, structured inquiry is a powerful vehicle for learning that promotes meaning and understanding, and challenges students to engage with significant ideas. Hence in the PYP there is also a commitment to a **concept-driven curriculum** as a means of supporting that inquiry. There are clusters of ideas that can usefully be grouped under a set of overarching concepts, each of which has major significance within and across disciplines, regardless of time or place.

These key concepts are one of the essential elements of the PYP framework. It is accepted that these are not, in any sense, the only concepts worth exploring. Taken together, they form a powerful curriculum component that drives the teacher- and/or student-constructed inquiries that lie at the heart of the PYP curriculum.

When viewed as a set of questions, the concepts form a research tool that is manageable, open-ended and more readily accessible to students. It is these questions, used flexibly by teachers and students when planning an inquiry-based unit, that shape that unit, giving it direction and purpose.

The following table explains each concept from both the generic perspective and the PSPE perspectives; a full explanation of the key concepts is found in the “Concepts: what do we want students to understand?” section.

Concept	Generic perspective	PSPE perspective
<b>Form</b> What is it like?	Everything has a form with recognizable features that can be observed, identified, described and categorized.	The features of personal, social and physical development, including feelings, beliefs, behaviours and movements, can be observed, identified and described.
<b>Function</b> How does it work?	Everything has a purpose, a role or a way of behaving that can be investigated.	An examination of the feelings, beliefs and behaviours affecting our interactions with others and the environment.
<b>Causation</b> Why is it like it is?	Things do not just happen. There are causal relationships at work, and actions have consequences.	Our personal, social and physical well-being, as well as our relationships, are influenced by our feelings, beliefs and behaviours, and their causing factors.
<b>Change</b> How is it changing?	Change is the process of movement from one state to another. It is universal and inevitable.	The inevitable personal, social and physical development, and change over time is influenced by intrinsic and extrinsic factors.
<b>Connection</b> How is it connected to other things?	We live in a world of interacting systems in which the actions of any individual element affect others.	An individual’s physical, emotional and social development is made up of interacting elements, including the behaviour of others and the environment
<b>Perspective</b> What are the points of view?	Knowledge is moderated by perspectives. Different perspectives lead to different interpretations, understandings and findings. Perspectives may be individual, group, cultural or disciplinary.	Different perspectives of beliefs, feelings and behaviours lead to different understandings of the world, including participation in, and enjoyment of, physical activity.
<b>Responsibility</b> What is our responsibility?	People make choices based on their understandings, and the actions they take as a result do make a difference.	Informed and appropriate choices leading to responsible actions make a difference to our health, well-being, community and the environment.

Concept	Generic perspective	PSPE perspective
<b>Reflection</b> How do we know?	There are different ways of knowing. It is important to reflect on our conclusions, to consider our methods of reasoning, and the quality and reliability of the evidence we have considered.	We constructively reflect on our feelings, beliefs, behaviours and movements to continue to develop personal, social and physical well-being.

## Examples of questions that illustrate the key concepts

The following table provides sample teacher/student questions that illustrate the key concepts, which may help to structure or frame an inquiry. These examples demonstrate broad, open-ended questioning—requiring investigation, discussion, and a full and considered response—that is essential in an inquiry-led programme. Further examples can be found in the PSE and PE scope and sequence documents.

Concept	Sample student/teacher questions	
	PSE	PE
<b>Form</b> What is it like?	<ul style="list-style-type: none"> <li>Which important decisions have you made in the past?</li> <li>Who works in the school and what do they do?</li> <li>What are responsibilities?</li> </ul>	<ul style="list-style-type: none"> <li>What is this movement like?</li> <li>What different shapes can you make on the floor using your body?</li> <li>What are the basic rules in this event/game?</li> </ul>
<b>Function</b> How does it work?	<ul style="list-style-type: none"> <li>How do rules help us to play?</li> <li>How are minority groups treated by society?</li> <li>Who works in the school and what do they do?</li> </ul>	<ul style="list-style-type: none"> <li>How do we collect and record results?</li> <li>How do you score points in your game?</li> <li>How does this movement work?</li> </ul>
<b>Causation</b> Why is it like it is?	<ul style="list-style-type: none"> <li>How do you feel when things do not work out the way you had hoped?</li> <li>What things make you feel at home?</li> <li>What are the things that can harm your body?</li> </ul>	<ul style="list-style-type: none"> <li>Why does your body change when you exercise?</li> <li>Why do people dance?</li> <li>Why do we need rules for this game?</li> </ul>

Concept	Sample student/teacher questions	
	PSE	PE
<b>Change</b> How is it changing?	<ul style="list-style-type: none"> <li>• What, if anything, would you change about how you work together?</li> <li>• How have you changed since you were a baby?</li> <li>• What could you change in your lifestyle to make it more balanced?</li> </ul>	<ul style="list-style-type: none"> <li>• What changes when you exercise?</li> <li>• What could you change in your lifestyle to make it more balanced?</li> <li>• How can you make yourself into different shapes?</li> </ul>
<b>Connection</b> How is it connected to other things?	<ul style="list-style-type: none"> <li>• What can we learn by playing?</li> <li>• How is our classroom like a home?</li> <li>• How are rights and responsibilities connected?</li> </ul>	<ul style="list-style-type: none"> <li>• What differences are there between running for speed and running for distance?</li> <li>• How can you work as a group to achieve a common aim?</li> <li>• How can your body movements show a mood, feeling or emotion?</li> </ul>
<b>Perspective</b> What are the points of view?	<ul style="list-style-type: none"> <li>• What is easy/difficult about working together?</li> <li>• How can we understand other people's points of view and help them to understand ours?</li> <li>• How does everyone celebrate their birthdays?</li> </ul>	<ul style="list-style-type: none"> <li>• Which kind of balance equipment do you like to use best, and why?</li> <li>• What is easy/difficult about working together?</li> <li>• What can help you to improve your performance in this event/game?</li> </ul>
<b>Responsibility</b> What is our responsibility?	<ul style="list-style-type: none"> <li>• What can we do to help us stay safe?</li> <li>• How can you be a responsible member of a group?</li> <li>• What rights and responsibilities do I have as I grow and change?</li> </ul>	<ul style="list-style-type: none"> <li>• How can you ensure everybody has a chance to use his or her ideas and skills?</li> <li>• How can you move around the space safely?</li> <li>• Why is it important to warm up before exercising?</li> </ul>
<b>Reflection</b> How do we know?	<ul style="list-style-type: none"> <li>• How do we identify situations that are potentially unsafe?</li> <li>• How do I know I am growing and changing?</li> <li>• How have you been influenced by your family history?</li> </ul>	<ul style="list-style-type: none"> <li>• How can you evaluate your performance?</li> <li>• Why is it necessary to create a space in dance?</li> <li>• How would you change the rules of the game?</li> </ul>



## Overall expectations in PSE

The *PSE scope and sequence* (2003) document identifies the expectations considered appropriate in the PYP. It does this by looking at the central ideas included in the *PYP sample programme of inquiry with sample planners* (2005) and identifying the essential understandings included.

These expectations (outlined here) are not a requirement of the programme, but it is recommended that schools undertake a careful consideration of their scope and sequence document in order to identify the overall expectations in PSE for their students. The expectations associated with PSE remain the same in different age ranges. The observable behaviours and skills associated with this development will look different in younger or older students.

When developing a scope and sequence, a school should bear in mind the following.

If the school adapts, or develops, its own scope and sequence documents for each PYP subject area, the level of overall expectation regarding student achievement expressed in these documents at least matches that expressed in the PYP scope and sequence documents.

*Programme standards and practices: C1.23, IBO (2005)*

Full details of sample questions, activities and assessments related to these expectations can be found in the *PSE scope and sequence* (2003) document, available on the OCC.

### 3–5 years

Students will develop an awareness of their self-identity and recognize some of their strengths and weaknesses. They will show self-confidence and self-worth. They will learn to recognize and communicate their own feelings and emotions in an appropriate way. They will reflect on their own abilities and behaviour. Students will show awareness of healthy lifestyle choices. They will develop a sense of safety and an ability to protect themselves from danger and abuse. Students will show increasing independence, and they will approach learning with flexibility, creativity and commitment. They will develop social skills when interacting with others in different situations, and they will develop and maintain appropriate relationships. They will show awareness of and respect for the views, needs, rights and differences of others. They will become aware of different ways of dealing with conflict situations.

### 5–12 years

Students will develop an awareness of their self-identity and their strengths and weaknesses. They will show self-confidence and self-worth. They will learn to recognize, communicate and manage their own feelings and emotions. They will reflect on their own abilities and behaviour and will set achievable personal goals. Students will show awareness of and take responsibility for the choices they make to maintain a healthy lifestyle. They will develop a sense of safety and an ability to protect themselves from danger and abuse. Students will show initiative and self-direction with increasing independence, and they will approach learning with flexibility, creativity and commitment. Students will develop social skills when interacting with others in different situations, and they will develop and maintain appropriate relationships. They will show awareness of and respect for the views, needs and rights of others. They will show appreciation of cultural, racial, social, linguistic and religious differences. They will recognize and deal appropriately with conflict situations.

## Overall expectations in PE

The *PE scope and sequence* (2003) document identifies the expectations considered appropriate in the PYP. These expectations (outlined here) are not a requirement of the programme, but it is recommended that schools undertake a careful consideration of their scope and sequence document in order to identify the overall expectations in PE for their students.

When developing a scope and sequence, a school should bear in mind the following.

If the school adapts, or develops, its own scope and sequence documents for each PYP subject area, the level of overall expectation regarding student achievement expressed in these documents at least matches that expressed in the PYP scope and sequence documents.

*Programme standards and practices: C1.23, IBO (2005)*

Full details of sample questions, activities and assessments related to these expectations can be found in the *PE scope and sequence* (2003) document, available on the OCC.

### 3–5 years

#### Health-related activities

Students will be aware of some of the elements of a healthy lifestyle (rest, well-balanced nutrition, exercise and so on) and that it is important to be physically active. They will recognize some basic changes that occur to their bodies when exercising and be made aware of safety aspects when exercising.

#### Body control and spatial awareness

Students will develop their spatial awareness, gross motor skills and creative skills through movement.

#### Athletic activities

Students will learn a variety of movements and associated vocabulary, for example, jump, hop, slide, rock, exploring different ways of moving on the floor and on apparatus. They will create small movement patterns, holding their body weight in stillness using various body parts as bases. They will be introduced to one or two basic skills, for example, a pin jump. They will explore different ways of moving with small equipment.

#### Games

Students will explore coordination, manipulation and balance in a range of games. They will travel in different ways, maintaining body control, changing speed and direction of movement. They will handle small equipment using various body parts. They will participate in, and follow instructions for, simple games requiring little or no equipment.

#### Movement to music

Students will explore non-locomotor and locomotor skills (including travelling, changing direction, altering pathways, and transferring weight) using music as a stimulus. They will use their imagination and original ideas to respond to a range of stimuli to express feelings and moods and be introduced to short sequences using basic step patterns.

#### Adventure challenge

Students will explore and develop the ability to solve tasks individually, in pairs or in small groups.

## **5–7 years**

### **Health-related activities**

Students will recognize the elements and the benefits of a healthy lifestyle (rest, well-balanced nutrition, exercise and so on), and they will become aware of the importance of physical activities in daily life. They will recognize basic changes that occur to their bodies when exercising, and they will demonstrate safety when exercising.

### **Body control and spatial awareness**

Students will develop an awareness of space, direction and levels in relation to others and to their working environment. They will travel in different ways, changing speed and direction with control. They will handle different apparatus and small equipment using various body parts (manipulative skills), and hold their body weight using various body parts as bases (balance and stability).

### **Athletic activities**

Students will develop traditional gymnastic skills, involving physical agility, flexibility, strength and coordination. They will interpret and answer movement tasks in their own way, and at their own level, on the floor and using apparatus. They will combine locomotor and non-locomotor skills while using small equipment.

### **Games**

Students will develop coordination, manipulation and balance, travel in different ways, changing speed and direction while maintaining body control. They will explore different apparatus and small equipment using various body parts. They will participate in, and follow instructions for, simple games requiring little or no equipment.

### **Movement to music**

Students will combine locomotor and non-locomotor skills in order to develop rhythmic responses. They will express feelings and moods using imagination and original ideas, and they will respond through movement to a range of stimuli. They will create simple individual movement sequences, and they will be introduced to short sequences using basic step patterns. They will master a dance containing basic step patterns that has a beginning, middle and end.

### **Adventure challenge**

Students will solve challenging problems, with or without apparatus, individually, in pairs or in small groups. They will participate in small group activities to accomplish a common goal.

## **7–9 years**

### **Health-related activities**

Students will identify and recognize the elements and the benefits of a healthy lifestyle (rest, well-balanced nutrition, exercise and so on), and they will be aware of the importance of physical activity in daily life. They will recognize the physical changes that occur to their bodies when exercising, and they will demonstrate safety when exercising.

### **Body control and spatial awareness**

At this age, body control and spatial awareness activities will be incorporated into other PE content areas.

### **Athletic activities**

Students will combine simple movements to create short sequences and improve their gymnastic skills, involving physical agility, flexibility, strength and coordination. They will interpret and answer movement tasks in their own way, and at their own level, on the floor and using apparatus. They will combine locomotor and non-locomotor skills while using small equipment. They will develop the basic techniques and rules of jumping, throwing and running events. They will be introduced to collecting and recording results, and they will understand and apply the basic safety rules in athletic events.

### **Games**

Students will develop coordination, manipulation and balance, participating in activities that develop spatial awareness and locomotor skills. They will handle different apparatus and small equipment using various body parts, participating in simple lead-up games. They will begin to develop their own games and related activities.

### **Movement to music**

Students will combine locomotor and non-locomotor skills in order to improve rhythmic responses, and they will respond through movement to a range of stimuli. They will express feelings and moods using imagination and original ideas, create simple movement sequences, master a dance containing basic step patterns with a partner or in small groups, and begin to master dances with more complex step patterns.

### **Adventure challenge**

Students will solve challenging problems, with or without apparatus, individually, in pairs or in small groups, and they will participate in group activities to accomplish a common goal.

## **9–12 years**

### **Health-related activities**

Students will identify and recognize the elements and benefits of a healthy lifestyle (rest, well-balanced nutrition, exercise and so on) and they will be aware of the importance of physical activity in daily life. They will recognize the physical changes that occur to their bodies when exercising, and they will demonstrate and apply safety when exercising.

### **Body control and spatial awareness**

At this age, body control and spatial awareness activities will be incorporated into other PE content areas.

### **Athletic activities**

Students will combine movements to create sequences, refine their gymnastic skills, involving physical agility, flexibility, strength and coordination. They will interpret and answer movement tasks in their own way, and at their own level, on the floor and using apparatus. They will combine locomotor and non-locomotor skills while manipulating small equipment. Students will practise specific techniques for jumping, throwing and running events. They will learn and apply the rules, including safety, of these various events, including collecting and recording results. They will evaluate their athletic performance and understand how they can improve their performance.

### **Games**

Students will develop coordination, manipulation, balance and spatial awareness, and they will participate in activities that refine locomotor skills. They will become competent in handling different apparatus and small equipment, and they will participate in lead-up games and in scaled-down or adapted versions of the recognized sports, for example, invasion games, fielding and striking games, net games and target games. They will develop their own innovative games and related activities.

### **Movement to music**

Students will demonstrate controlled combinations of movement, changing speed and direction, and they will combine locomotor and non-locomotor skills in order to refine rhythmic responses. They will respond through movement to a range of stimuli, expressing feelings and moods using imagination and original ideas. They will create more complex movement sequences, and they will be exposed to a range of dances containing more complex step patterns. They will master dances containing complex step patterns with partners and in small groups, and they will begin to recognize techniques and forms of dance. They will be aware of the different purposes and types of dance, and they will appreciate the dances of different countries and cultures.

### **Adventure challenge**

Students will solve challenging problems, with or without apparatus, individually, in pairs or in groups, and they will participate in group activities to accomplish a common goal.

## Arts in the Primary Years Programme

### Beliefs and values in the arts

The arts are not mere diversions from the important business of education; they are **essential** resources.

Elliot W Eisner, "The Role of the Arts in Cognition and Curriculum" (2001)

Arts are viewed by the PYP as a form of expression that is inherent in all cultures. They are a powerful means to assist in the development of the whole child, and are important for interpreting and understanding the world. Arts in the PYP promote imagination, communication, creativity, social development and original thinking.

From an early age, students have the opportunity to develop genuine interest, to give careful consideration to their work, and to become self-critical and reflective. They are provided with opportunities to communicate about their creative work and to share their understanding with teachers, peers and families.

Through the arts, students gain confidence and competence in self-expression and collaborative learning, in both formal and informal settings. A competence in reflecting and evaluating their own work and the work of others is integral, and empowers students to take risks in and beyond the arts setting.

In the PYP, the arts are identified as drama, music and visual art, which are significant disciplines in their own right. However, the transdisciplinary nature of the arts makes them an essential resource throughout the curriculum: through the arts we learn to communicate, have exposure to other cultures and other times, and find out more about ourselves. The creative process is seen as a driving force in learning through inquiry.

The IB learner profile is integral to teaching and learning arts in the PYP because it represents the qualities of effective learners and internationally minded students. The learner profile, together with the five essential elements of the programme—knowledge, concepts, skills, attitudes and action—informs planning, teaching and assessing in the arts.

Exposure to and experience with the arts opens doors to key questions about life and learning. Evidence of students' learning will be seen in their willingness and ability to take action in order to make a difference in the world.

### Good arts practice

Arts teaching requires a formalized structure that encourages students' artistic development. Skills and processes are introduced in a systematic way without reducing the opportunity for students to inquire into the creative process.

Students draw on a wide range of stimuli: the creative works of professional artists; contemporary and historical literature; music, artwork, dance and stories. Drama, music and visual artwork develop naturally from students' own imaginations, observations, real-life experiences, feelings, values and beliefs. Introducing issues and concepts through appropriate media gives them meaning and allows students to take ownership of them.

Arts inquiry in a PYP classroom takes place in an environment that stimulates and challenges students. It is well resourced with an extensive range of tools, supplies, teaching materials, media and audio-visual equipment. These resources reflect the work of artists of both genders from around the world throughout time. The use of appropriate technology influences and enhances student learning. Students are able to gather, organize, create, record, share and assess information through the use of ICT as well as other media.

Learners of the arts are both active and reflective. As well as being actively involved in creating and performing, students reflect on their work and on the work of others. Collaborative activities with other students in their own classes or other classes are essential; inquiring, working and reflecting with other students (older or younger) in a two-way learning process.

Students are given opportunities to meet and work with living artists from a variety of cultures. They attend live performances and art exhibits as well as experiencing reproductions. Students display their work or perform in both informal and formal settings because an awareness of the audience is a skill that can be learned only through practical application.

A PYP teacher's personal knowledge of the arts is of key importance. What teachers themselves understand shapes which resources they choose, what learning experiences they design and how effectively they teach. The teacher's own interest in, and development of, the disciplines of drama, music or visual art is maintained through regular professional development, reading of professional journals and, especially, through regular contact with colleagues who share their commitment to teaching arts through inquiry. Commercially available resources for teaching the arts are carefully evaluated in order to ensure that they meet the requirements of the teacher, the students and the curriculum.

## The role of arts in the programme of inquiry

Arts are inquiry-based because of the nature of the creative cycle and the emphasis on process. In addition, the learner profile, concepts, knowledge, skills, attitudes and action are embedded in a balanced arts curriculum.

Whenever possible and appropriate, arts teaching should be within the school's programme of inquiry. Arts teachers may use a number of the following models to teach their subject area within the PYP.

- **Integrating or supporting a unit within the programme of inquiry:** Whenever appropriate, arts teachers should be involved in collaborative planning to design and teach the units of inquiry.
- **Preparing for or following on from a unit within the programme of inquiry:** The direct teaching of arts in a unit of inquiry may not always be feasible but, where appropriate, introductory or follow-up activities may be useful to help students make connections between the different aspects of the curriculum. Arts teachers plan and teach activities or experiences that prepare students for participation in a unit of inquiry. Following on from a unit, students may demonstrate their understanding of the central idea in an arts activity.
- **Independent inquiry:** There are times when arts teachers will be teaching their subject area independently using purposeful inquiry. At such times, teachers should structure their teaching and learning through the use of the learner profile, the transdisciplinary themes and central ideas. Teachers should still ensure that authentic connections are made while maintaining the integrity and essential character of the discipline.
- **Skills-based teaching:** This refers to the teaching of subject-specific skills not directly related to a unit of inquiry but required for the development of students' understanding. If undertaking a skills-based lesson outside the programme of inquiry, arts teachers should still recognize that the same philosophy and pedagogy must underpin their planning and teaching of the subject.

## How arts practices are changing

Structured, purposeful inquiry is the main approach to teaching and learning arts in the PYP. However, it is recognized that many educational innovations (or, more accurately, educational reworkings) suffer from the advocacy of a narrow, exclusive approach. The PYP represents an approach to teaching that is broad and inclusive, in that it provides a context within which a wide variety of teaching strategies and styles can be accommodated, provided that they are driven by a spirit of inquiry and a clear sense of purpose.

The degree of change needed to teach arts in this way will depend on the individual teacher. For those teachers who have grown weary of imposed change for which they see little point, it should be stressed that teachers are not expected to discard years of hard-earned skill and experience in favour of someone else's ideas on good teaching. It is suggested, rather, that teachers engage in reflection on their own practice, both individually and in collaboration with colleagues, with a view to sharing ideas and strengths, and with the primary aim of improving their teaching to improve student learning. In doing so, they will be modelling the skills and attitudes that have been identified as essential for students.

As an aid to reflection, the following set of subject-specific examples of good practice has been produced. It is believed that these examples are worthy of consideration by anyone committed to continuous improvement.

How are arts practices changing?	
Increased emphasis on:	Decreased emphasis on:
collaborative planning and dialogue with classroom teachers and other single-subject teachers	individual planning in isolation from other teachers
arts teachers involved with the process of developing the units of inquiry and defining the central idea	classroom teachers developing the units of inquiry and defining the central ideas that are disseminated to arts teachers
planning for a conceptual understanding	thematic planning: for example, working on a play, composition, dance or a piece of visual art that is connected to a particular theme or topic
arts teachers viewed (and viewing themselves) as PYP teachers	arts teachers seen as solely single-subject teachers
students working, observing and performing in different areas of the school and community	students remaining at all times in the arts rooms for lessons
arts as an avenue to inquire	arts supporting other areas of the PYP
a variety of modalities, activities, assessments and artistic experiences	textbook-driven arts curriculum
students exposed to arts from multiple cultures, genres, time periods and languages	students allowed access only to arts from a single culture
students' questions directing arts projects, and individual creativity valued and encouraged	teacher-led arts projects
deeper understanding of concepts behind artistic experiences	superficial use of artistic conventions



How are arts practices changing?	
Increased emphasis on:	Decreased emphasis on:
assessing students' understanding regularly through all stages of the creative process as well as the final product.	assessment of the end product or performance only.

## Knowledge and skills in the arts

Arts are built into the curriculum as essential areas of learning, not added on as optional extras. Students are required to be exposed to all three arts, identified within the PYP as drama, music and visual art, which are significant disciplines in their own right. Within these subject areas, the expectations are then arranged into subject-specific strands. Although these strands are considered separately, in practice they are inextricably linked. Within each of these interconnected strands, there should be a balance between the acquisition of knowledge and skills, and the development of conceptual understanding. Students should be made aware of the inevitable links to other areas of the curriculum in order to understand the interconnected nature of the subject areas, with one another and with the transdisciplinary themes.

All curriculum areas provide an opportunity to utilize the transdisciplinary skills identified in figure 8 in the “Skills: what do we want students to be able to do?” section. The arts component of the curriculum also provides opportunities for students to:

- develop proficiency as musicians, actors and visual artists
- acquire audience skills such as listening and viewing responsively
- interpret and present their own or others' works to a range of audiences
- evaluate the different roles of artists in society such as to entertain, provoke debate or challenge views and perceptions
- create and critique plays, compositions and artwork using a selection of tools and techniques
- express feelings, ideas, experiences and beliefs in a variety of ways
- improve coordination, flexibility, agility, strength and fine motor skills.

### Drama perspective

Drama includes the development of creative skills, verbal and non-verbal expression, an awareness of the perspectives of others, and aesthetic appreciation. Drama enables all students to communicate in powerful ways that go beyond their spoken language ability. Through drama, students can begin to construct an understanding of their community, their environment, and their own feelings and emotions. They will also have opportunities to work cooperatively to put together a performance and to experience situations from different viewpoints.

The *Drama scope and sequence* (2004) document identifies the major expectations considered appropriate in the PYP. These expectations are arranged into six strands: **creative exploration and expression, technical incorporation, performance, personal and social development, reflection, evaluation and appreciation** and **drama in society**.

## Music perspective

Music includes the study and exploration of sound and the expressive use of musical elements. Students will join together in musical activities using their voices, bodies and simple instruments to develop concepts about sound and musical awareness. Students will be exposed to, and work on, a wide range of musical stimuli. They will participate both individually and in groups. Students will read, develop and record musical ideas in composition. They will develop an awareness and appreciation of music from a range of times, places and cultures. The development of listening skills will be constantly reinforced through live and recorded performances. Students will have opportunities for practice, and consistent exposure to music in order to produce mastery and lifelong appreciation.

The music knowledge component is arranged into five strands: **performing—singing and playing instruments, creating and composing, notation, listening and appreciation** and **music in society**. In the *Music scope and sequence* (2004) document, four strands are identified. The “music in society” strand has been added to bring music into line with the drama and visual art perspectives.

## Visual art perspective

Visual art includes the development of creative skills, verbal and non-verbal expression, an awareness of the perspectives of others and aesthetic appreciation. Visual art enables students to communicate in powerful ways that go beyond their spoken language ability. Through visual art, students can begin to construct an understanding of their community, their environment, their own feelings and emotions, and to develop their cultural awareness.

The *Visual art scope and sequence* (2004) document identifies the major expectations considered appropriate in the PYP. These expectations are arranged into four strands: **creative processes, elements and principles of art and design, reflection and appreciation** and **visual art in society**.

## Drama strands

### What do we want students to know?

#### **Creative exploration and expression**

The development of imaginative skills and creativity, and their application in a variety of drama situations.

**Related concepts:** character, choreography, dance, gesture, improvisation, mime, movement, representation, tableaux, voice.

#### **Technical incorporation**

The technical aspects of the drama process such as script writing, stage directions and the management of props, costumes, special effects and set design.

**Related concepts:** lighting, masks, production, puppetry, scenery, sound, storyboard.

#### **Performance**

Portraying and sustaining a role or character in a given situation by using voice, body and gesture; understanding audience and how to perform to it.

**Related concepts:** acting, audience, climax, direction, dramatic irony, live performance, presentation, production, projection, rehearsal.

<b>Personal and social development</b>	<p>Developing group cohesiveness through the opportunity to cooperate, support, share, negotiate, and resolve conflict both in and out of role; developing confidence and focus to gain independence in learning.</p> <p><b>Related concepts:</b> chorus, dialogue, ensemble, improvisation, role play.</p>
<b>Reflection, evaluation and appreciation</b>	<p>Reflecting on own performance and critiquing that of others in order to enhance and improve learning.</p> <p><b>Related concepts:</b> audience, characterization, performance, review, script writing.</p>
<b>Drama in society</b>	<p>The role drama plays in society and in diverse cultures, both historical and contemporary; identifying and analysing theatrical conventions.</p> <p><b>Related concepts:</b> celebration, comedy, entertainment, festivals, melodrama, musicals, pantomime, period drama, street theatre, tragedy.</p>

**Related concepts:** While the key concepts have been identified, related concepts could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Here, examples of some possible related concepts have been provided for each of the strands. Schools may choose to develop their own related concepts.

## Music strands

### What do we want students to know?

<b>Performing—singing and playing instruments</b>	<p>The use of a range of instruments to perform individually and as part of an ensemble for an audience in formal and informal settings; the voice is the most immediately available instrument for most students, regardless of age or ability.</p> <p><b>Related concepts:</b> breathing, chorus, direction, harmony, movement, orchestration, percussion, pitch, solo, tempo, timing, unison.</p>
<b>Creating and composing</b>	<p>The use of students' musical experience, imagination and suggestions to generate and organize sounds using a variety of media to create compositions that communicate or record specific ideas or moods; students will use their experience and imagination to improvise and practise creative movement to music.</p> <p><b>Related concepts:</b> concerto, ensemble, instrumentation, lyrics, melody, pattern, score, silence.</p>
<b>Notation</b>	<p>The use of traditional and non-traditional notation to read, interpret and record compositions, and recreate compositions.</p> <p><b>Related concepts:</b> dynamics, note values, octave, pitch, score, sheet music, stave, symbols.</p>

### Listening and appreciation

Identifying and describing various musical elements and concepts, and learning to make personal musical decisions through both an active and reflective process.

**Related concepts:** ear training, improvisation, interpretation, melody, repertoire, rhythm, timbre.

### Music in society

The role music plays in society and in diverse cultures, both historical and contemporary.

**Related concepts:** celebration, classical music, composers, dance, festivals, instruments, musical genres (folk music, jazz, popular music, reggae), notation.

**Related concepts:** While the key concepts have been identified, related concepts could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Here, examples of some possible related concepts have been provided for each of the strands. Schools may choose to develop their own related concepts.

## Visual art strands

### What do we want students to know?

#### Creative processes

The development of imagination and creativity through experimentation and self-expression.

**Related concepts:** collage, communication, cubism, design, dimension, genres, illustration, impressionism, inspiration, proportion, subject.

#### Elements and principles of art and design

The theoretical and practical aspects of art and design, incorporating both ideas and components (such as balance, colour, form, pattern, repetition, harmony).

**Related concepts:** application, culture, composition, contrast, light, movement, media, position.

#### Reflection and appreciation

The study and appreciation of a range of artworks (including students' own work) to develop understanding of the principles of art and design in the world around them.

**Related concepts:** audience, composition, culture, observation, perspective, stereotype, subjectivity.

#### Visual art in society

The role visual art plays in society and in diverse cultures, both historical and contemporary.

**Related concepts:** architecture, celebration, fashion, graffiti, icon, memorial, sculpture, propaganda, religion, self-expression, tradition.

**Related concepts:** While the key concepts have been identified, related concepts could provide further links to the transdisciplinary programme of inquiry or further understanding of the subject area. Here, examples of some possible related concepts have been provided for each of the strands. Schools may choose to develop their own related concepts.

## Key concepts in the PYP: what do we want students to understand about the arts?

Central to the philosophy of the PYP is the principle that purposeful, structured inquiry is a powerful vehicle for learning that promotes meaning and understanding, and challenges students to engage with significant ideas. Hence in the PYP there is also a commitment to a **concept-driven curriculum** as a means of supporting that inquiry. There are clusters of ideas that can usefully be grouped under a set of overarching concepts, each of which has major significance within and across disciplines, regardless of time or place.

These key concepts are one of the essential elements of the PYP framework. It is accepted that these are not, in any sense, the only concepts worth exploring. Taken together, they form a powerful curriculum component that drives the teacher- and/or student-constructed inquiries that lie at the heart of the PYP curriculum.

When viewed as a set of questions, the concepts form a research tool that is manageable, open-ended and more readily accessible to students. It is these questions, used flexibly by teachers and students when planning an inquiry-based unit, that shape that unit, giving it direction and purpose.

The following table explains each concept from both the generic perspective and the arts perspective; a full explanation of the key concepts is found in the “Concepts: what do we want students to understand?” section.

Concept	Generic perspective	Arts perspective
<b>Form</b> What is it like?	Everything has a form with recognizable features that can be observed, identified, described and categorized.	Arts are a form of communication that allows us to convey ideas, feelings and concepts to an audience through visual art, music, words, movements and expressions.
<b>Function</b> How does it work?	Everything has a purpose, a role or a way of behaving that can be investigated.	Arts use creativity to convey a message that can be practical, educational, cultural or personal. A relationship is developed between the artist and the audience whereby informed opinions or choices may be made.
<b>Causation</b> Why is it like it is?	Things do not just happen. There are causal relationships at work, and actions have consequences.	Arts are a creative, emotional and thoughtful interpretation of the world; they are influenced by cultural and personal experience.

Concept	Generic perspective	Arts perspective
<b>Change</b> How is it changing?	Change is the process of movement from one state to another. It is universal and inevitable.	Arts are never static. As the world changes, the methods and means of arts must evolve with it.  Experiences in arts will alter according to the interpretations of the participant or the audience.
<b>Connection</b> How is it connected to other things?	We live in a world of interacting systems in which the actions of any individual element affect others.	Arts are a universal language by which we can communicate within and across cultures and time periods.
<b>Perspective</b> What are the points of view?	Knowledge is moderated by perspectives. Different perspectives lead to different interpretations, understandings and findings. Perspectives may be individual, group, cultural or disciplinary.	Arts allow for the opportunity of creative choice. Different points of view naturally arise depending on whether an individual is creating or composing, performing or displaying, viewing or listening.
<b>Responsibility</b> What is our responsibility?	People make choices based on their understandings, and the actions they take as a result do make a difference.	Arts convey a powerful message to an audience, and we must be aware that our interpretations can affect others. We must also take an active role in preserving the arts and creating an awareness and appreciation of arts from all cultures.
<b>Reflection</b> How do we know?	There are different ways of knowing. It is important to reflect on our conclusions, to consider our methods of reasoning, and the quality and reliability of the evidence we have considered.	We consciously reflect on, evaluate and describe how we have expressed ourselves through the acquisition of the elements of drama, music and visual art. We also reflect on the performance of others in the pursuit of self-improvement.

## Examples of questions that illustrate the key concepts

The following table provides sample teacher/student questions that illustrate the key concepts, which may help to structure or frame an inquiry. These examples demonstrate broad, open-ended questioning—requiring investigation, discussion, and a full and considered response—that is essential in an inquiry-led programme. Further examples can be found in the arts sections of the PYP scope and sequence documents.

Concept	Sample teacher/student questions		
	Drama	Music	Visual Art
<b>Form</b> What is it like?	<ul style="list-style-type: none"> <li>What was the performance about?</li> <li>How might this character move?</li> </ul>	<ul style="list-style-type: none"> <li>What makes a song a folk song?</li> <li>What sounds do you hear in this music?</li> </ul>	<ul style="list-style-type: none"> <li>Why have you chosen that material/tool?</li> <li>How would you describe the way the elements of art have been used in this painting?</li> </ul>
<b>Function</b> How does it work?	<ul style="list-style-type: none"> <li>How can you show what you are feeling?</li> <li>How can you create the sounds of the beach using your voice?</li> </ul>	<ul style="list-style-type: none"> <li>What sounds can you make with this instrument?</li> <li>What does this sign/symbol tell us to sing?</li> </ul>	<ul style="list-style-type: none"> <li>How can you show yourself feeling angry/sad/happy/frightened?</li> <li>How is colour used in advertising?</li> </ul>
<b>Causation</b> Why is it like it is?	<ul style="list-style-type: none"> <li>Why did the characters behave in this way?</li> <li>Who was your favourite character and why?</li> </ul>	<ul style="list-style-type: none"> <li>Why is a steady beat important in an ensemble performance?</li> <li>What culture do you think this music comes from?</li> </ul>	<ul style="list-style-type: none"> <li>Why do you think this piece of art has been made?</li> <li>Why do you think people visit art galleries?</li> </ul>
<b>Change</b> How is it changing?	<ul style="list-style-type: none"> <li>How can constructive criticism improve your performance?</li> <li>How does the story begin, develop and end?</li> </ul>	<ul style="list-style-type: none"> <li>What would happen to a song if the tempo went from allegro to largo?</li> <li>How is a musical variation different from the theme?</li> </ul>	<ul style="list-style-type: none"> <li>Why and how do fashions change over time?</li> <li>How has new media influenced artistic practices?</li> </ul>
<b>Connection</b> How is it connected to other things?	<ul style="list-style-type: none"> <li>How is watching a live show similar to/different from watching TV?</li> <li>How can we find out about our past through stories?</li> </ul>	<ul style="list-style-type: none"> <li>How does the size of the instrument relate to the pitch of the instrument?</li> <li>In what types of celebrations would you hear this music?</li> </ul>	<ul style="list-style-type: none"> <li>How does art help us celebrate?</li> <li>What do the colours and shapes remind you of?</li> </ul>

Concept	Sample teacher/student questions		
	Drama	Music	Visual Art
<b>Perspective</b> What are the points of view?	<ul style="list-style-type: none"> <li>Which character did you identify with, and why?</li> <li>How do you think that character is feeling now?</li> </ul>	<ul style="list-style-type: none"> <li>Which instruments would you choose to play this pattern or song, and why?</li> <li>How does this music make you feel?</li> </ul>	<ul style="list-style-type: none"> <li>How do you think this flower would look if you were the size of an ant?</li> <li>How does someone's culture influence the work they produce?</li> </ul>
<b>Responsibility</b> What is our responsibility?	<ul style="list-style-type: none"> <li>In what ways can you help the group to complete the task?</li> <li>What did you feel when you were playing this character?</li> </ul>	<ul style="list-style-type: none"> <li>What can each musician in a group do to make a good performance?</li> <li>How can we look after this instrument?</li> </ul>	<ul style="list-style-type: none"> <li>Who do you need to speak to and involve in this project, and why?</li> <li>Which materials do you think can be recycled into art, and why?</li> </ul>
<b>Reflection</b> How do we know?	<ul style="list-style-type: none"> <li>How can you show what you have learned?</li> <li>How can we solve a problem when we have different points of view?</li> </ul>	<ul style="list-style-type: none"> <li>Did you make a good choice of instruments or sound sources for your piece? Why, or why not?</li> <li>Why is the tempo of this song appropriate for the mood and the words of the piece?</li> </ul>	<ul style="list-style-type: none"> <li>Are these materials the best ones for your task, and why?</li> <li>What makes an interesting design?</li> </ul>

## Overall expectations in the arts

The arts scope and sequence documents identify the expectations considered appropriate in the PYP. These expectations (outlined here) are not a requirement of the programme, but it is recommended that schools undertake a careful consideration of their scope and sequence document in order to identify the overall expectations in the arts for their students.

When developing a scope and sequence, a school should bear in mind the following.

If the school adapts, or develops, its own scope and sequence documents for each PYP subject area, the level of overall expectation regarding student achievement expressed in these documents at least matches that expressed in the PYP scope and sequence documents.

*Programme standards and practices: C1.23, IBO (2005)*

Full details of sample questions, activities and assessments related to these expectations can be found in the arts scope and sequence documents, available on the OCC.



## Overall expectations in drama

In addition to the following strands, students will have the opportunity to identify and reflect on “big ideas” by making connections between the questions asked and the concepts that drive the inquiry. They will become aware of the relevance these concepts have to all of their learning.

### **3–5 years**

Students will work together, share ideas and begin to make group decisions. They will listen and respond positively to the suggestions of others. Students will welcome the variety of cultural backgrounds inherent within their group, and the dramas they develop. They will develop an awareness and acceptance of differences in traditions, celebrations, beliefs and behaviour. Students will use drama to explore concepts in the units of inquiry taken from the programme of inquiry, and they will be introduced to teacher-in-role. Students will use a variety of stimuli to initiate classroom play and make-believe activities. They will develop the confidence to create their own dramas through play, and to share these with others where appropriate. Students will be willing and eager to explore movement and space using music and other stimuli. Where possible, students will be exposed to a variety of performance and presentation experiences, and they will discuss what they have seen and experienced.

### **5–7 years**

Students will work together, sharing ideas and making group decisions. They will listen and respond positively to the suggestions of others. Students will welcome the variety of cultural backgrounds inherent within their group, and they will value the cross-cultural aspects of the dramas they develop. They will develop an awareness and acceptance of differences in traditions, celebrations, beliefs and behaviour. Students will use drama to explore concepts in the units of inquiry taken from the programme of inquiry, and they will be introduced to teacher-in-role. Students will use a variety of stimuli to initiate classroom play and make-believe activities. They will develop the confidence to create their own dramas through play, and to share these with others where appropriate. Students will be willing and eager to explore movement and space using music and other stimuli. Where possible, students will be exposed to a variety of performance and presentation experiences, and they will discuss what they have seen and experienced.

### **7–9 years**

Students will work independently and with confidence in small groups and with partners. They will apply their knowledge of the content of the programme of inquiry to develop dramas. Students will apply their knowledge of cross-cultural differences when creating dramatic roles and locations. They will use personal experiences and other stimuli to create a drama. Students will reflect and comment on their own work and on the work of others in a sensitive and positive way. They will be able to adopt a role and switch in and out of role to discuss their discoveries. They will be able to respond to contributions from the teacher-in-role. Students will develop an understanding of the way in which body and voice can be used to depict a character through specific voice and body exercises and activities. Where possible, students will be exposed to performance conventions from other cultures, and to a variety of performance and/or presentation experiences; they will observe carefully and they will be able to discuss what they have seen.

## 9–12 years

Through creative exploration and expression, students will reach an emotional and conceptual understanding of the areas being studied. Students will make immediate connections between fantasy and real-life situations. They will practise self-discipline in the presentation of material to an audience as well as within the role of the audience. They will incorporate production elements effectively to enhance their work, using costume, make-up, set, lights, sound and props. Students will bring original text to life using a variety of conventions. They will continue to explore the way in which body and voice can be manipulated to depict a character, an emotion or a concept through a variety of exercises. Students will work towards creating a healthy group dynamic, where they feel comfortable making suggestions and accepting criticism on how their work, and the work of others, can be developed. They will listen carefully to suggestions, and they will begin to be able to apply these to the development of their work. They will be able to work independently, in pairs, in small groups and as a class group. They will use a journal to reflect on and evaluate their work, to record their ideas, their discoveries and the subjects being addressed. Students will be introduced to performance conventions from other cultures, and they will be given the opportunity to practise these in their dramas. Where possible, students will be exposed to a variety of performance and/or presentation experiences; they will be encouraged to discuss and evaluate what they have seen, to identify what was effective, and to begin to transfer these discoveries to the presentation of their own work.

## Overall expectations in music

In addition to the following strands, students will have the opportunity to identify and reflect on “big ideas” by making connections between the questions asked and the concepts that drive the inquiry. They will become aware of the relevance these concepts have to all of their learning.

### 3–5 years

Music is the study and exploration of sound and the expressive use of musical elements through the singing of songs and the playing of instruments. Students will join together in musical activities, using their voices and simple instruments to develop concepts about sound and musical awareness. They will participate, both individually and in groups, in games, songs, and creative movement activities. Students will develop musical ideas in composition using musical notation. They will begin to develop an awareness and appreciation of music from different cultures.

### 5–7 years

Students will gain an awareness and appreciation of music in all its forms from a range of times, places and cultures. Students will sing and play a variety of songs and pieces with an awareness of beat. Students will have the opportunity to experiment with sounds in composition tasks and to make expressive use of musical elements such as pitch and rhythm. They will use notation to develop musical ideas. They will develop an awareness and appreciation of music from different cultures, and they will be able to describe and compare sounds using simple appropriate musical vocabulary.

### 7–9 years

Students will gain an awareness and appreciation of music in all its forms from a range of times, places and cultures. Through singing songs and playing instruments, students will develop the ability to perform accurately and confidently, making expressive use of musical elements. They will control and develop musical ideas in composition, and they will use notation as an aid to storing and refining ideas. They will listen with greater understanding to a range of music from different times and places.

## **9–12 years**

Students will develop musical ideas in composition using musical notation. They will gain an awareness and appreciation of music in all its forms from a range of times, places and cultures. Students will experience a wide range of songs in different languages and from different times, and will perform them with sensitivity and accuracy. They will create their own music and perform it to others using increasingly sophisticated instruments, and they will be able to interpret the music of others through the understanding of complex notation. They will continue to develop their understanding of music from different sources and cultures.

## **Overall expectations in visual art**

In addition to the following strands, students will have the opportunity to identify and reflect on “big ideas” by making connections between the questions asked and the concepts that drive the inquiry. They will become aware of the relevance these concepts have to all of their learning.

### **3–5 years**

Students will enjoy working both individually and in small groups. They will begin to develop an understanding of the varied functions and uses of different materials and tools. They will learn to choose the best materials and tools for a particular task and to care for them appropriately.

### **5–7 years**

Students will use first-hand source materials, including their immediate environment and their imagination, as an inspiration for their work. They will exhibit an increasing ability to concentrate on and complete a piece of artwork. They will discover and develop their own preferences and individual interests that will contribute to the development of understanding and artistic vision. They will continue to explore the use of a wide variety of materials, tools and media, and they will draw on their increasing knowledge and skills to express their ideas, observations and feelings. Students will be exposed to and will respond to artifacts and artworks of varied cultural origins, and they will become familiar with the process of reflection and how to appreciate their own and others’ artworks.

### **7–9 years**

Students will establish a foundation of self-awareness about their own interests and preferences in art. They will develop this interest by exploring and experimenting with a variety of tools, materials and techniques. Students will exhibit confidence in choosing tools and materials that are appropriate for their artworks and that reflect their growing individual creative vision. They will exhibit greater control and purpose in their use of a variety of media and tools. They will make initial sketches, and they will be aware that a piece of artwork requires thought, planning, effort and revision. They will discuss their work using specific art vocabulary, and they will be increasingly aware of the fact that other students and groups will produce work that varies in style and content. Students will search beyond the classroom for resources, and they will begin to see links with other areas of the curriculum. They will respond reflectively to the artwork of others.

## **9–12 years**

Students will develop confidence in seeing themselves as artists, and they will have a growing appreciation of their individual artistic interpretation and vision. Their responses to tasks will demonstrate increased levels of technical detail and heightened levels of sophistication. They will continue to develop skills of observation and to seek out a variety of resources. They will be confident in the everyday use of sketchbooks for recording observations, ideas, pattern and colour. They will choose the appropriate materials for the task, building on previous skills and experiences when using a variety of materials. They will develop the skill of looking at artworks and artifacts from different periods, and they will draw conclusions and make predictions about their function. Students will work well, both alone and in groups, and they will be sensitive to the work of others, suggesting modifications and discussing reactions constructively. They will be aware of the elements and principles of art and design, and they will develop a more critical stance to their own immediate environment.