

interest in the theory of constructivism in education. The idea that significant learning only happens when the learner connects new ideas with previous knowledge or experience and, as a consequence, constructs new meaning made sense to many educators, particularly educators who believed in a holistic form of education—the education of the whole child. With the advent of constructivist education the more pedagogically focused MYP and PYP were of their time.

A pedagogy described: The relationship between teacher and student

In 2011 there is a large degree of consensus among educators, and even politicians, on what and how students need to learn if they are to be the effective global citizens and lifelong learners our world urgently requires. For the IB this is encapsulated in the IB learner profile.

Students in the 21st century need specific skills and attributes.

- They need to be knowledgeable in the major academic disciplines, make connections across those disciplines and access knowledge quickly and effectively to solve personal, local and global problems, which will inevitably be complex and transdisciplinary in nature.
- They need to be curious about everything in the world around them and to use that curiosity to inquire, to ask the difficult and the awkward questions and persist in finding the answers.
- They should be able to think for themselves with confidence, to analyse and synthesize information and then be able to discriminate between what is good or bad, right or wrong.
- They need to be able to communicate effectively, with sensitivity, clarity and conviction, in more than one language, with people from diverse cultures with diverse ways of thinking.
- They should have the desire to know about and understand the lives, beliefs and thoughts of others, which will help them understand the basis for their own thoughts and beliefs.
- They need to be prepared to be bold in their thinking and be prepared to make mistakes, knowing that mistakes can lead to greater understanding.

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- They should be able to put themselves in other people's shoes; they should be prepared to act to change what is wrong.
- They should value their own lives and live them thoughtfully, reflectively and with integrity.

What pedagogical approaches best develop these qualities and attributes in young people? The traditional pedagogical model, the delivery model, is that of the teacher as the authority, the holder and giver of knowledge, with the student as the largely passive receiver of the teacher's knowledge and wisdom. Little is expected in terms of a relationship between the teacher and student; the teacher must know her material and explain it effectively and the student must listen and remember.

The more progressive pedagogical model, and the model required for international education in the 21st century, is that of the teacher as the "intellectual leader" but also the guide to and facilitator of learning, enabling students to construct meaning for themselves. In 1916 John Dewey advocated that classrooms be seen as laboratories for democracy, and this concept continues to resonate strongly with many educators worldwide today.⁴ To what extent it is practised is questionable. It is certainly a model that is not widely practised in countries where educational opportunities are more limited.

The relationship between teacher and student has a profound influence on the learning that takes place in the classroom and the effectiveness of the school. The daily encounters, interactions, exchanges of words and looks are the core of relationships; the cumulative experience of these daily encounters will largely determine the success of the school in developing in young people the attributes of the learner profile.

What should these relationships look like? They can be characterized as follows.

- **The teacher as learner:** The teacher, while having expertise in her level of teaching and being a "model of competence" in her subject area also sees herself as a learner.⁵ She is curious, wanting to extend her own knowledge, and she is excited by new learning that might develop in the class. She learns—and allows the class to learn—from the culture, life experiences and knowledge of each of her students. In this situation, exchanges become more exploratory and the relationship between students and teacher is based on mutual respect.
- **Empowering students as learners:** From the idea of teacher as learner evolves the concept of empowering students to take charge of their own learning—by enabling them to sometimes define the line of inquiry

through their questions, to try out ideas and defend their position, to make mistakes and then carry on learning.

- **Democratizing the classroom:** Both these ideas—of teacher as learner, and empowered students—lead to the democratization of the classroom. It becomes a classroom where students' knowledge and ideas are listened to and valued; where students have opportunities to make choices about their learning; where students work collaboratively and cooperatively as well as independently as members of a learning community.

A classroom that is characterized by the above will challenge the traditional model and change the power base but it will liberate the teacher to teach in the most purposeful, creative, effective and rewarding ways. John Dewey argued for it in the 1930s and Socrates practised it over two thousand years ago. This is not a new pedagogical model, nor an outmoded one; the imperative for it now is greater than ever, as is our ability to make it work with the availability of the 21st-century tools and resources. Students no longer have to access the information they need from the teacher or a limited supply of books in the school library. The internet has made available limitless sources of information with multiple perspectives and varying degrees of reliability, way beyond the capacity of even the most knowledgeable of teachers.

A pedagogy described: Seven pedagogical principles

A pedagogical model for international education can be described through seven principles. These are far from definitive, but they are synthesized from a list of effective teaching practices for international education that were developed by a team of experienced IB practitioners from all three IB programmes and documented in *Towards a continuum of international education*.⁶ As with many aspects of international education, these principles could apply equally to effective teaching in any national system. However, they are essential to the development of the attributes of the IB learner profile in students and, therefore, to developing international-mindedness and global citizenship. If everything a teacher does or says in the classroom applies one or more of these principles, the desired shift in the teacher–student relationship is likely to occur:

- valuing the knowledge and experiences of students
- teaching through concepts
- putting learning into context
- differentiating the learning experiences for the range of learning abilities and styles

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- structuring teaching around inquiry and critical thinking
- developing students to become independent, lifelong learners
- creating a stimulating learning environment and a community of learners.

Valuing the knowledge and experiences of students

If one of the primary goals of international education is greater understanding of each other and our place in the world, then creating in the classroom a microcosm of the sort of society we want our students to value and contribute to building is one important way of achieving that goal. The teacher should make the best use she can of students' knowledge and life experiences, not only to enable them to connect and build their understanding, but to demonstrate that she and the other students truly want to learn about other ways of thinking and being.

In writing about multicultural education in the United States, Mayes, Cutri, Rogers and Montero describe education in the 21st century as requiring the creation of classrooms where "students are edified by each other's world views".⁷ "Edified" does not just mean that those views are tolerated or respected; it means teacher and students have their worlds changed, expanded, uplifted by hearing about other ways of thinking and being.

This is not so difficult to accomplish; it does not require expensive resources. It only requires that the teacher makes time in classes, whether it is with students aged 3 or 17, to find out about the background of each of her students, to explore what they already know about the topic under discussion and to facilitate the sharing and developing of that knowledge. For example, asking students studying Shakespeare's *Hamlet* in English to translate one of the soliloquies into their mother tongues will provoke a discussion of the use of metaphor, poetry and existential angst in other cultures and, thereby, lead to a deeper understanding of Shakespeare's text; it will also lead to an understanding of the significance of language as a vehicle of culture and to valuing the mother tongues of the students in the class. If the ethos in the class is one of sharing and valuing, students will feel empowered to reflect on their prior knowledge and experiences, will become genuinely interested in what other students think and will grow to understand the myriad ways there are of seeing and understanding the world.

Teaching through concepts

In IB programmes, concepts are defined as powerful ideas that have relevance within the subject areas but also transcend them. For example, the concept of "imperialism" can be used to explore a particular war or political strategy; the concept of "managing our resources" can help the class explore dependence on certain fuels. A

concept is recognized or better understood when meaningful connections are made between bodies of knowledge; the making of those connections leads to a deeper understanding of the world and an improved ability to solve problems.

The exploration of concepts and the re-exploration of those same concepts at different stages of their education, sometimes described as the spiralling of concepts, can lead students towards an appreciation of ideas that transcend disciplinary boundaries, as well as towards the essence of each subject area. Students gradually work towards a deepening of their conceptual understanding as they approach these concepts from a range of perspectives, across the disciplines.*

In the PYP there is a set of eight concepts that contribute to the structure of the transdisciplinary curriculum:

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

These are very broad concepts that can be explored and re-explored at any age and through all of the academic disciplines. For example, the impact of climate change on the availability of water, its effects on a particular community and possible solutions can be explored through the concept of “change” or “responsibility” with conceptual links made across geography, physics and economics for the older grade levels.

Teaching through concepts allows and encourages teachers to teach beyond the local context and national or cultural boundaries. In the eight key concepts from the PYP, there is nothing culturally specific; they encourage a broad, generic approach that can encompass many ways of thinking, as well as diverse experiences. Given that the exploration of complex global issues is an essential element of international education, approaching those issues through key concepts will provide a breadth of knowledge and insight that will lead to a deeper understanding of the related local issue; in effect, this approach will help learners function effectively and independently in an increasingly complex and diverse world.

* See the IB publication *Making the PYP happen* (2007) for more insights on conceptual understanding.

Putting learning into context

Learning is most significant and lasting when it is connected to the world around the student; acquiring skills and knowledge and the search for meaning and understanding are best done in the context of the exploration of relevant content. Largely as a result of technology, in this century the world around the student has become larger, more diverse and more complex. So, as a consequence, has the notion of relevant content.

The world of the student and relevant content will derive to a large extent from the student's prior knowledge, culture and experiences. Learning will become relevant and meaningful when it is connected to that background and valued by the teacher and fellow students. The different worlds around students are connected by concepts; for example, the concept of "causation". What causes immigrants to leave their own countries for what are often alien and unwelcoming new ones? Why did the characters in the play behave in this way? What underlying patterns do these calculations illustrate? The concepts are pathways into students' lives in order to make the learning relevant and meaningful, and to connect relevance and meaning across cultures.

But a student today is also touched by the larger world in ways rarely known to previous generations of students. To connect learning to the world of the student requires the student to be presented with as many opportunities as possible to explore global issues by connecting ideas across the academic disciplines and connecting the global to the local and the personal. The teacher also needs to understand and, where possible, harness the power of new technologies to engage students and develop knowledge and understanding in multiple ways. Using collaborative technologies, students studying the ecology of their lakeside beach in Chicago, USA, can compare their findings with those of students studying a coastal beach in Queensland, Australia, leading to a deeper understanding of the global issues at play. Failure to connect across the disciplines and to understand the uses of new technologies will inevitably result in loss of context and opportunities for meaningful learning.

Differentiating the learning experiences for the range of learning abilities and styles

Differentiated instruction is best described as a way of thinking about teaching and learning rather than a teaching strategy. Historically it evolved from the development of appropriate curriculums for the "gifted and talented" and the "slow learner". Later differentiation was acknowledged as sound practice for all students and can be defined as a teacher's response to the diverse learning needs of each student,

given that every student has unique needs. Differentiation involves continual review and adaptation of goals and teaching strategies in a classroom.

In order to successfully differentiate instruction in the classroom, the teacher needs to develop a greater understanding of the variety of ways in which learners work, both alone and with others. Differentiated instruction also requires that the learner be empowered to take a more active and responsible role in the planning, carrying out and reviewing of what is learned. In assessing for learning, for example, the teacher can provide students with a variety of ways in which to demonstrate their understanding; the students choose an assessment task that best demonstrates what they have learned, and subsequently evaluate their own performance on that task. The teacher is required to be sensitive to this variety of ways of learning and be flexible enough in her thinking to accommodate and value those who may not perform in the generally accepted way.

Learners may learn differently for many reasons, including their cultural background or early experiences. Whatever the reason, the principle is that the teacher values the individual with all his or her differences and does all she can to organize her teaching so that it meets the needs of each student by differentiating goals, activities, tasks and assessment. To differentiate teaching strategies is to value and accommodate diversity.

Structuring teaching around inquiry and critical thinking

Inquiry and critical thinking are not just sets of skills to be taught; they are approaches to teaching that infuse the way a teacher thinks, plans and evaluates. If teaching is focused on facilitating inquiry and critical thinking, it presupposes that learning is about questioning and exploring ideas and knowledge rather than memorizing and reproducing information. It presupposes that the teacher sees herself as a learner alongside the student, valuing what the students bring of themselves to the questioning and exploring. There is a place for drill, practice and memorization in the classroom, but teaching to the fullest extent possible about concept-based ideas through inquiry and critical thinking leads to more substantial and enduring learning.

Inquiry, interpreted in the broadest sense, can be described as the process that moves students from their current level of understanding to a new and deeper level of understanding. The inquiry process entails synthesis, analysis and manipulation of knowledge to help learners construct meaning. This can include:

- exploring, wondering and questioning
- experimenting and playing with possibilities

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- making predictions
- collecting data and reporting findings
- clarifying and reappraising ideas
- hypothesizing and testing theories
- researching information
- taking and defending a position
- solving problems in a variety of ways.

Inquiry will lead to critical thinking. The act of questioning means the student is engaged. It could be argued that all thinking is critical, but the term critical thinking implies a particular level of engagement of the mind, a level of engagement required for deeper understanding and learning that endures. The ability to think critically and creatively is necessary for our individual and collective survival; our students need to be able to distinguish sense from nonsense, propaganda from truth, and make their own well-informed judgments.

Students require constant opportunities to be curious, to question, to connect, to search for alternative reasons or explanations, to challenge, to take an objective view, to explore and understand the reasons why others think and behave as they do and what the consequences may be. Such teaching requires that content (disciplinary, interdisciplinary and transdisciplinary) is very carefully selected and that it is relevant, provocative, challenging and significant. Students learning Spanish as a second language are likely to be far more stimulated and challenged to learn that language if they are researching, discussing and writing an article for a local newspaper about the discrimination against Spanish speakers in a particular city, as opposed to answering questions on a paragraph in Spanish from a textbook. It is only through subject matter of substance that students can employ and develop their critical-thinking skills to the fullest.

In our 21st-century knowledge society we have never had so much accessible information in such a variety of forms and from such a wide range of sources. It is neither possible nor desirable for any teacher to be the only source of knowledge about a subject. Students can access any information they want, at any time of day, through the World Wide Web. It is therefore vital that students learn how to question and think critically, so as to be able to determine the validity and authenticity of what they read or hear, to question the attitudes and history behind what they read or hear, and to develop the confidence and experience with which to form an opinion. These challenges face all teachers throughout the world.