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Perspectives on a curious subject: What is IB theory of knowledge all about?

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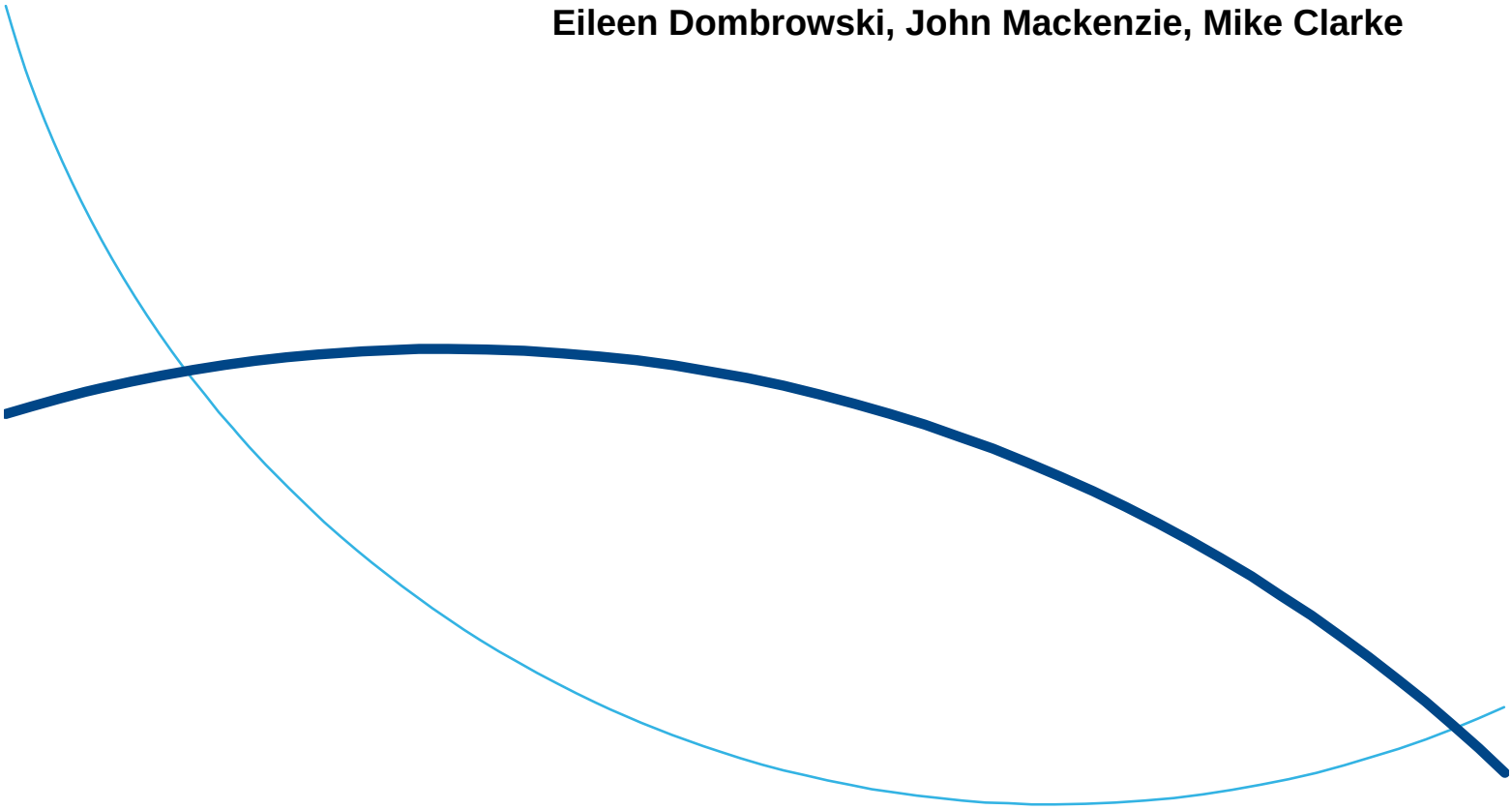

Who might want to read this document?

Theory of knowledge (TOK) is a curious subject. It is curious in the sense that it questions and wonders, reflects and connects, in a spirit of inquiry. It is also curious in the other sense of the word—that it is a little odd, a little unlike the other subjects in the IB Diploma Programme.

School leaders might be the first to ask, "What's this subject all about?" as they try to link up TOK with appropriate teachers and place it into their school's programmes. Teachers of TOK might be the next to ask—especially new teachers as they take on a subject that ranges, by its very nature, beyond their own fields of expertise. Indeed, all teachers involved in the IB Diploma Programme might well ask, since the education they give students in their own classrooms and through community, action, service (CAS) becomes a topic of discussion in TOK. Just as TOK teachers want to make a connection between their overview and subject-specific courses, other teachers—for the benefit of students' education—will want to connect their subjects effectively with the TOK overview. As TOK embraces the whole of the Diploma Programme, asking questions about how we know in all areas of knowledge, and in our daily lives, all parts of the curriculum are involved.

Even teachers and administrators of the earlier IB programmes—the Primary Years Programme (PYP) and the Middle Years Programme (MYP)—might be interested in what goes on in the TOK classroom. After all, theory of knowledge encourages students to bring into its own classroom not only their present education but also all their previous knowledge, from their lives and past education. Practitioners in the PYP and MYP might be interested to see the continuity of their own contributions to student knowledge through the overarching understanding stimulated in theory of knowledge.

For those who would like to pick out and read just the bits most relevant to their own interests, we have provided a table of contents. May this document go far to satisfy—or stimulate—your own curiosity!

Table of contents

Introduction

"The aim of all IB programmes," declares the introduction to the IB learner profile, "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."[i] According to the profile, IB learners should be open-minded thinkers who are ready to:

- ask and explore questions
- develop a broad understanding across a range of disciplines
- appreciate a variety of views and perspectives
- apply thinking skills critically and creatively.

Although all programmes and all subjects aim to fulfill the attributes of the IB learner profile, the core elements of the IB Diploma Programme have a special role. Through the awareness and skills that should be developed in its classroom, theory of knowledge (TOK) distills much that the IB seeks to develop in its students.

However, to achieve its own aims and further those of the IB, TOK must be taught with a full understanding of what it can achieve and how. In this regard, many in the IB community face an immediate problem—they do not understand what TOK is all about or see how it fits within the IB Diploma Programme as a whole. There is no readily available explanation from the IB that fills in the background and nature of the course in a way that satisfies their questions; the introduction in the subject guide is necessarily fairly short and has evidently proved to be insufficient. It is in acknowledgement of this problem, and in the hope of remedying it, that the present document has been written.

Challenges

Theory of knowledge is an unusual course. While the IB Diploma Programme has many distinctive elements, TOK is perhaps the most curious. Because it is different in various ways from more familiar school subjects, it poses particular challenges—challenges for schools, teachers, the IB itself, and the students who take the course. Some of those challenges, such as basic misunderstandings about the nature and purpose of TOK, need to be dispelled; others are intrinsic to TOK, and are part of what makes it important and exciting.

1. The challenges for schools

These may include:

- choosing how TOK is to be taught (is it better to have a single TOK teacher taking students through the course, or a team of several subject specialists?)
- selecting appropriate people to teach it (what are the appropriate qualities and qualifications for a TOK teacher, and what professional development should that teacher be offered?)
- giving teachers suitable support (how should the subject be placed logistically within the school's curriculum?).

It is only when school administrators understand the nature and value of TOK that it can receive proper attention and support.

2. The challenges for teachers

These may include:

- having to “unlearn” some basic assumptions about the processes of teaching and learning (what does the TOK teacher have to bring to the course?)

- possibly having to develop new classroom skills (how can teachers and students know when they have made progress?).

In almost all subjects, there is basic information with which students need to be familiar so that they can develop understanding. In TOK, the situation is different—there is no specific body of knowledge required, so no necessity for the teacher to be, in that sense, an authority.

3. The challenges for the IB

These may include:

- curriculum development (how can a curriculum be developed to its best when its thrust is not conveying a body of knowledge but structuring inquiry regarding the process of knowing itself; how can teaching sequences and stimulus materials be presented most effectively when adaptability to school circumstances is prized?)

- assessment (how can assessment be made clear and unproblematic to schools and teachers when what is being tested is overview understanding and thinking skills, without specific content?)

- teacher training (how can sufficient initial training and ongoing professional development be provided for large numbers of teachers and examiners affordably and effectively, especially given the IB's expansion?).

At the moment, curriculum review is underway for theory of knowledge, and questions that affect the course itself are receiving significant attention.

However, the true challenge of TOK—and a highly positive one—is what it offers students. They are the ones on whom the course centres as teachers guide them towards becoming the embodiment of the inquiring, open-minded, critical thinkers of the IB learner profile. If schools, teachers and the IB can rise to their own challenges, then TOK will achieve its potential for our students far more often than it presently does.

In this document, we hope to improve the contribution that theory of knowledge makes to our students' education by clarifying the nature and purpose of the course for the IB community. We turn first to a brief background of educational theory, then to key concepts of the course, and then to TOK classroom practice. We close with a look at where TOK sits within the Diploma Programme and what it thereby contributes to the whole.

Educational theory: A brief history

The process of learning

The present theory of knowledge (TOK) course did not come into being in a single moment, or in a political and social vacuum. Although a history of the IB’s educational goals is beyond the scope of this document, it is worth noting that TOK was created within it partly in response to the demands of some of its early educators and was developed in response to several currents of educational thinking during the past half-century. Pragmatism, politics and personalities have influenced its creation and its development.[ii] Moreover, it continues to develop—shifting the way it frames its central ideas or places emphasis—to respond to changes within the IB as a whole.

Theory of knowledge has been central all along to the IB’s educational goals. The nature of learning has always been important for the IB, and from very early on institutional documents have highlighted:

- the shortening shelf-life of what we call “knowledge”, with the increasing rate of change in all areas

- the importance of students learning life-skills, such as learning to learn, and of the student as an “active learner”.

All of this was common IB parlance well before “lifelong learning” became the household idea it is today.

The central place of TOK in the IB Diploma Programme has become even more evident, though, with the creation of a continuum of education aiming for lifelong learning:

- the Primary Years Programme (PYP, introduced in 1997)

- the Middle Years Programme (MYP, introduced in 1994)

- the Diploma Programme (introduced in 1969).

The characteristics that link the three programmes lead to an increased emphasis on the **process** of learning and knowing, that core interest of TOK.

A quick glance back historically shows that the IB has always depended on a fusion of educational product and educational process. At one time it was identified most distinctively with the rigorous and demanding examinations that all students must sit. The Diploma Programme in these terms functions as a qualification for university entrance that is internationally recognized; the diploma “product” (the certificate) has given the IB immense practical value for members of mobile communities.

The Diploma Programme has nevertheless always been rooted in the process of learning, which led to its international recognition as excellent preparation for university. The examinations seek to tease out important skills developed over the two years of coursework. The assessment criteria are designed to see how students are able to apply what they have learned, and not merely set down on paper the facts they are able to commit to memory.

With the introduction of the PYP and the MYP—programmes that are not subject to final examinations—the process of learning has moved further into the spotlight. The focus of quality control has moved from the guaranteed product, or exam result, to an emphasis on pedagogy and the learning process. (This is mainly achieved through the professional development of teachers, which for some programmes is mandatory for all teachers in a particular section of the school.)

At the same time, the IB’s goal to create a common educational framework for the three programmes—essential both in schools that offer all three and in schools that seek to coordinate with educational experiences beyond their own walls—has caused the newer programmes to have an effect on the older Diploma Programme. What was once known as the PYP student profile has become the IB learner profile and is declared to be “the heart of this common framework”.[iii]

In the IB learner profile, educational content is not minimized, as students are to “acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines”.[iv] Yet immense value is placed on personal qualities and skill development. The IB’s presentation of this vision of education thus articulates and emphasizes some of the features it has long possessed in order that all parts of the continuum develop coherently in a common direction, with a considerable stress on the educational process.

Social constructivism: Illuminating practice

To say that a good teacher should be aware of the process by which students learn is to add nothing new to pedagogical insight. Indeed, excellent teachers do not necessarily choose to teach according to this theory or that, or are even particularly aware of the influence of contemporary educational thinking on their own practice. Awareness of education theory, however, enables an

educational programme to be directed more effectively towards achieving its goals—a good theory illuminates many features of effective teaching.

It is not surprising, then, that the IB's endorsement of social constructivism as significant to its educational pedagogy has served to highlight much good teaching that was going on long before it did so and to encourage further development in its likeness. For instance, the 2002 document *A continuum of international education* states that the IB encourages "diversity and flexibility in pedagogical approaches" and that all of its programmes give "central focus to the student as 'the knower', constructing meaning from existing knowledge and personal experience through active inquiry".[v]

More explicitly and extensively endorsing social constructivism is the 2007 document *Making the PYP happen: A curriculum framework for international primary education*. It is not surprising that the document originates in the primary school programme where, with a younger age group, there is a greater emphasis on transdisciplinary learning (a key element in constructivist pedagogy) resulting in far less emphasis on disciplines as distinct from one another. In making explicit the beliefs underlying its pedagogy, the document claims:

> 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.
>
> [The challenge of building meaning] 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.[vi]

The excerpt above presents well the main tenets of social constructivism.[vii]

These two documents quoted above articulate concepts of education that lie behind TOK within the Diploma Programme. Indeed, in "Nature of the subject" in the *Theory of knowledge guide* (March 2006), TOK sounds like a social constructivist's dream come true in its emphasis on inquiry, on process, and on students as active creators of their own understanding:

> The TOK course … encourages critical thinking about knowledge itself, in order to try to help young people to make sense of what they encounter. Its core content is questions like these: What counts as knowledge? How does it grow? What are its limits? Who owns knowledge? What is the value of knowledge? What are the implications of having, or not having, knowledge?
>
> What makes TOK unique, and distinctively different from standard academic disciplines, is its process. At the centre of the course is the student as knower. Students entering the Diploma Programme typically have 16 years of life experience and more than 10 years of formal education behind them. They have accumulated a vast amount of knowledge, beliefs and opinions from academic disciplines and their lives outside the classroom. In TOK they have the opportunity to step back from the relentless acquisition of new knowledge in order to consider knowledge issues. These include the questions already

> mentioned, viewed from the perspective of the student, but often begin from more basic ones …
>
> TOK activities and discussions aim to help students discover and express their views on knowledge issues. The course encourages students to share ideas with others and to listen to and learn from what others think. In this process students' thinking and their understanding of knowledge as a human construction are shaped, enriched and deepened.[viii]

This course description echoes key tenets of social constructivist thought:

- active student engagement in the process of inquiry
- deepening understanding through exchange of ideas with others
- reflection on the construction of meaning that we call "knowledge".

The educational theory of social constructivism embraced by the IB serves to highlight many of TOK's most distinctive features.

Structuring inquiry

In the document *Making the PYP happen*, quoted above, the method for achieving the educational goals of social constructivism in the classroom is identified as being "principally through structured inquiry".

Although this IB document refers to primary students, "inquiry" effectively ties the different IB programmes into a coherent whole. What inquiry means to children of different ages, how much they can achieve autonomously (that is, without some guidance from their teacher or other competent adult) and what skills need to be taught for students to be increasingly independent inquirers, are of course the central questions in choosing pedagogical strategies and in designing curriculum. Many current movements in education converge on the same idea of learning as constructing meaning through inquiry, such as:

- inquiry-based learning
- project- or problem-based learning
- meaningful learning
- authentic learning.

Such inquiry is given structure within the IB educational programmes in order to guide it supportively and purposefully. Within the PYP, inquiry is shaped by the overarching PYP themes, and every school must produce a "programme of inquiry".

Within theory of knowledge, "structured inquiry" becomes an idea essential to understanding the course and planning to teach it.

- In its **inquiry**, TOK centres on the key concepts of knowledge issues, perspectives and critical thinking. This is examined in "Metacognitive inquiry and TOK").
- In its **organizational structure**, TOK can be quite flexible but deals with a number of specific topics indentified in the *Theory of knowledge guide* (March 2006). Structuring the course is examined in "Structure of the TOK inquiry".
- In its **pedagogical approach**, TOK centres on student inquiry under the guidance of teachers. This is examined in "TOK inquiry in the classroom".

Metacognitive inquiry and TOK

Whereas “social constructivism” as educational theory comes from the work in developmental psychology that has its origins in the middle of the twentieth century, the term “metacognition” became popular far more recently, in the 1980s. This rather weighty term, which simply means “knowing about knowing”, is the main aim of the theory of knowledge (TOK) course.

A common use of “metacognition” refers to:

- the awareness that students have of their learning processes, and
- the degree of control they are able to achieve in their learning thanks to this awareness.

Students are more able to learn effectively when they are aware of what learning strategies work best for them, and also if they are able to identify their moods and emotions. (One may not know that one is procrastinating, but if one does then at least there is a chance that something can be done to remedy the situation.) Strategies for effective learning abound, and there is empirical evidence to back their claims that they have an impact on learning.[ix]

While TOK does have a component of this sort of awareness, its major metacognitive impact probably lies elsewhere, in the development of the **key concepts** of the course:

- knowledge issues
- perspectives
- critical thinking.

As students become increasingly familiar with these concepts and comfortable in exploring and applying them, they gain awareness of the strategies for gaining and passing on knowledge in the subjects they are studying and the educational programme they are following. They also come to recognize more fully the characteristics of knowledge they have gained from their own experience and their own communities. Ultimately, if they gain both awareness and skills in TOK, they will build their own knowledge more thoughtfully and effectively in the future, both as academic learners and as members of their societies.

Knowledge issues

In TOK, discussions explore knowledge itself as alive with questions to be posed and considered, and possible responses to be put forth and evaluated. The question “How do I know?” lies at the centre of TOK, taking the form of many and varied specific questions regarding its creation in everyday life and different subject areas, its justifications, complexities, uncertainties, implications, value. These are “knowledge issues”—questions or topics for exploration that rise to the surface when a spirit of inquiry is applied to the process of knowing itself.

This term for the central concept of theory of knowledge seems to have generated a degree of confusion in the IB community, perhaps surprisingly given that TOK has undergone no major recent change in this regard. A couple of decades ago, there was no single term for the course’s central metacognitive thrust and the relevant marking criterion for the essay was simply called “content” since that was what TOK was all about. Thereafter the concept was called “problems of knowledge” to try to catch the sense that knowing was filled with enticing puzzles and challenges with which students could grapple. Then, as the negative connotations of “problems” inadvertently encouraged a view of knowledge focused primarily on its limitations, the term was changed to “knowledge issues”. Issues, after all, attract lively interest and discussion, often with interplaying perspectives.

There is some suggestion within curriculum review at the moment that the term should shift to “knowledge questions”, to catch the sense of inquiry. However, that term too would necessitate explanation, since placing sentences in interrogative mood does not equate to posing questions

conceptually. (For example, “Why am I always right and you always wrong?”, “Don’t you think that … *Fill in speaker’s opinion* … ?”*)* Likewise, placing sentences in assertive mood does not preclude a questioning attitude. (For example, “We will want to consider whether the poll sample was sufficiently large and representative to support the conclusions based on it.”) No shift of terminology will dispel a sense of mystification if the problem is one of confusion regarding the concept of inquiry and the many possibilities that arise when applying it to knowledge.

Perspectives

TOK’s metacognitive thrust applies also to students’ awareness of their process of reaching conclusions from their own points of view, with all the influences, including their education, that have acted on them throughout their lives. In their recognition that they don’t “just know” but know from a particular perspective, two threads are intertwined:

- students’ growing awareness of their own thinking, and

- students’ growing awareness of the thinking of others.

The first thread involves self-awareness. As students identify influences that have contributed to their thinking, recognize some of their own unstated beliefs or assumptions, examine what they have learned in their academic classes, and articulate their own thoughts, they become more conscious of what they know and how they know it. They begin to identify more fully the grounds for their own assertions and some of the limitations of their own knowledge. In the process, they may lose some comfortable certainties, but gain a richer, more nuanced understanding of themselves and their learning.

To a large extent, the stimulus to reflect on their own thinking comes from finding that others think differently. The second thread of metacognitive awareness, intertwined with the first, involves this awareness of others. In the exploration of ideas and the discussion of the grounds for knowing things, students encounter personal differences and similarities. Reflection on the process of knowing, for oneself and for others, opens the way to recognizing that others may have absorbed different cultural, ideological or personal assumptions, which, like the student’s own, may be basic to their thinking and sometimes unexamined. Recognizing differences is not only a matter of acknowledging diversity in the beliefs that people hold. Others may also approach problem-solving and communication in quite different ways. Yet they use the same ways of knowing and can offer good reasons for their conclusions. Exchange of ideas in a spirit of inquiry can contribute greatly to the understanding envisaged in the IB’s mission statement that “other people, with their differences, can also be right”.

TOK in the Diploma Programme develops metacognitive awareness of this sort at an appropriate age. Children first begin to develop what psychologists call a “theory of mind” at about the age of 5, when they first are able to reason that what is happening to them is also happening to people like them. This is the age at which one can begin to expect initial manifestations of empathy, though egocentrism is still the norm. One often feels that there is a regression to this stage in early adolescence, one that seems to wear off as children grow older. Yet if students do not have to address certain questions when they are 17 or 18, they are less likely to do so thereafter, barring special circumstances. The lessons in intellectual humility and the capacity to take alternative views seriously often lie behind comments by staff members of universities about the special maturity of IB students.

If we take open-mindedness and the capacity to recognize and consider other perspectives as a central part of what it means to be internationally minded, then it is easy to see why the aims of TOK are so central to the IB’s purpose.

Critical thinking

Metacognitive awareness in TOK is also stimulated by the critical-thinking skills that students learn as part of the course and their self-awareness in applying them. The particular knowledge issues under discussion and the perspectives brought to bear on them demand reflection, examination and analysis. Taking ideas seriously involves looking at them closely to understand why a person

or a group is putting them forward and what their grounds are for accepting them, no matter whether that person or group happens to be a professional body of scientists, a psychological researcher and theorist, any speaker presented as an expert in any field, the supporters of a political ideology, the marketers of any product or service, the organizers of a local charity drive, or any of the other numerous sources of claims that surround us daily. Students in TOK should be learning to critique arguments from different perspectives and to apply the same critical standards to the arguments they make themselves.

Four further important concepts of the TOK course are immediately involved:

1. knowledge claims

2. assumptions

3. justification

4. implications.

1. Knowledge claims

Knowledge claims are assertions that something is the case. Students learn to distinguish kinds of claims, for example, a factual claim within science or history, a claim of values within ethics, or a claim of religious belief. They examine what is actually being said (and not said), with an awareness of ambiguities and subjective shading of language and the frequent gap in expression (often social or cultural) between what is said and what is intended. Students are also encouraged to look at claims fairly, with an awareness of their own inclinations to interpret (or misinterpret) claims in a particular way.

2. Assumptions

Assumptions lie behind and around knowledge claims as the unarticulated “givens”, often part of a web of interconnected and mutually reinforcing beliefs. In practical terms, it is almost impossible to articulate every prior conclusion on which many claims may be based; trying to do so would be rather like creating a footnote that reads “everything else I accept, consciously or not”.

People often do not recognize their own assumptions, for example, cultural and ideological assumptions, or others rooted in their own temperaments, their own family experience, their own relative wealth or poverty, or their own geographical spot on the planet. However, closing in on the most relevant and significant assumptions, as much as possible, is likely to clarify what is meant or intended by a knowledge claim, what further questions have to be asked to understand it, what further claims may be based upon it, and how and why other assumptions may markedly differ.

Identifying assumptions is a significant skill in building and communicating knowledge. Logic and mathematics immediately spring to mind as demanding the articulation of assumptions, but the clarity of arguments in all areas of knowledge benefits from identifying assumptions that are important to the development of the ideas. Seeking buried assumptions is also useful in communicating across cultures and in resolving conflicts, dealing with differences between what different groups know and how they know it.

3. Justification

Justification is the grounds for accepting a knowledge claim, and the support one might advance for it. It may take a number of different forms, all with knowledge issues to be explored, as in the following examples.

- Reasoning

  (If deductive reasoning, are the premises/assumptions reliable and the reasoning valid? If inductive reasoning, how reliable is the evidence base for generalizing? What is the role of a hypothesis?)

- Evidence

  (How much evidence, gathered how? How persuasive and why? How are the different ways of knowing involved in gathering and evaluating evidence?)

- Memory

  (What possible fallibilities exist in memory? Can the memory be corroborated? In what ways may memory be stirred or invoked to contribute to understanding in different areas of knowledge?)

- Expert testimony

  (Do the experts possess appropriate qualifications recognized in the relevant field? Are there any apparent commercial or ideological interests that might be funding the testimony?)

- Faith

  (Is faith the rejection of the need for justification, or is it a justification itself? Do all knowledge claims need justification for other people?)

Critical examination of this sort is crucial to the TOK course in order to recognize different kinds of knowledge and scrutinize justifications to determine whether they are appropriate and sufficient to support the claims. “Other people,” says the IB mission statement, “can also be right.” It does not mention that other people can also be wrong, just as one can be wrong oneself.

Accompanying such examination is a close look at **unjustified** grounds for accepting attitudes, values or ideas. Awareness of common fallacies, for instance, helps students filter out many knowledge claims. To recognize some claims as fallacious, it is necessary to examine not only explicit statements of knowledge claims and their articulated justifications, but also implicit claims with support based on suggestion and association. Particularly given our digital age, in which students and their societies are awash with music and visual images of all kinds, critical thinking has to come to grips with forms of communication of ideas that are non-verbal and appeals that are primarily emotional. Such appeals can be immensely persuasive and can strongly influence reactions students have to many topics.

Theory of knowledge should foster critical awareness, however, without the over-reaction of treating all emotional appeal as irrelevant or dubious. Appeals to fear or to pity, for instance, are certainly not always used as diversionary tactics, as logical fallacies. They can be legitimate emotional appeals significant to an argument; we may have very good reasons to respond to fear with concern for safety, or respond to an appeal to pity with compassion and action. Moreover, non-rational communication involving appeals to emotion through the use of language, music and images, for example, are turned to advantage in some forms of knowledge, as often in the arts.

4. Implications

Finally, students should be encouraged to recognize the implications of their own knowledge and the knowledge held by others. It would be so easy if all implications were of the logical sort: $A \rightarrow B$, $B \rightarrow C$, and therefore what follows inescapably is that, yes indeed, $A \rightarrow C$. Many implications, though, are fuzzier and lie in the realm of likelihood. If students accept a particular claim—or, more significantly, a body of claims held together by a unifying perspective—then what further claims are they likely to accept, and how are they likely to act on their basis? What we accept carries many implications in the looser sense—for our attitudes, our sense of responsibility, our actions.

Indeed, theory of knowledge can contribute greatly to the role of students as future global citizens if it fosters this combination of metacognitive awareness and skills:

- an awareness that knowledge and knowledge claims are alive with knowledge issues open to their own inquiry

- the capacity to recognize alternative perspectives (including their own) and explore them open-mindedly

- the ability to critique knowledge claims and the perspectives (including their own) within which they have a place.

TOK can continue the teaching already achieved towards the attributes of the IB learner profile at earlier ages and support the teaching of other Diploma Programme subjects. In connection with the IB continuum of education, it can help students build their own knowledge in a discerning way, as a sound basis for positive action in the world.

Structure of the TOK inquiry

So far, we have been dealing with inquiry in the abstract, and with the concepts and skills that the theory of knowledge (TOK) course aims to develop in students. Understanding these conceptual goals is essential for planning a good TOK course, but it is not in itself sufficient. The inquiry has to come to ground in a classroom. It has to become "structured inquiry" with the kind of structure useful to a teacher—a sequence of topics that can be prepared and scheduled.

Discussion of these topics should run through the two years students spend in the IB Diploma Programme, so that what they are learning in their other subjects continues to feed into their reflection within TOK.

TOK course topics

The TOK course topics all involve the key concepts of the course discussed in "Metacognitive inquiry and TOK", but applied to a sequence of topics within knowledge.

The *Theory of knowledge guide* (March 2006) begins with ideas of knowing and knowledge, not presenting a definition to be accepted but opening up questions that will remain in play for the rest of the course. The course does not declare. It invites.

The guide then moves to four ways of knowing:

- sense perception

- reason

- language

- emotion.

Each of these means of gaining knowledge generates abundant knowledge issues for discussion. The four in connection with each other generate yet more.

The guide then considers areas of knowledge that have been generated through the four ways of knowing:

- mathematics

- natural sciences

- human sciences

- history

- the arts

- ethics.

They are all treated for their characteristics as knowledge, and all treated in comparison with each other. Comparisons involve those same key concepts considered earlier: knowledge issues, perspectives and critical thinking.

The guide does not advance the areas of knowledge as exclusive of other knowledge; the discussion on what knowing involves, opened as the course began, embraces knowing in all areas of life. Teachers should bear in mind that the guide's outline is itself a topic for consideration.

Order of course topics

The TOK course, in successive guides and other literature, has invited teachers to design their own sequence of topics to explore the course ideas or even, as in the current 2006 guide, encouraged experimentation. The order in which the topics are to be treated, then, is one of the first decisions that a school or teacher must make.

1. The order in the subject guide

An invitation to modify the order is certainly not to be taken as a negative reflection on the order in which ideas are presented in the *Theory of knowledge guide* (March 2006). That order is far from arbitrary and contains a strong rationale.

- Introducing ideas of knowing at the beginning encourages students to become aware that knowing is done by people, with all the variation of humanity. It opens up knowledge as something to be pursued, thought about, questioned, revised, valued—as active and living, as fascinating to explore. Knowing **matters**.

- Moving on next to ways of knowing anchors knowledge in students' own experience, with exploration of how we come to know. Student discussions on limitations of ways of knowing and means of trying to overcome those limitations lead comfortably to consideration of using ways in combination and trying to be careful and critical in the process. "Knowledge issues", "perspectives" and "justification" are certainly terms we will introduce as teachers, but the concepts they name arise almost inevitably out of student discussion.

- By the time we come next to areas of knowledge, then, students are already prepared to consider the methodologies of different disciplines as possible means of using ways of knowing carefully. Already studying many of the areas that TOK treats, students are ready to examine the methods and content of what they are doing in their IB subjects and integrate them into a growing picture of knowledge.

- Even the particular order of the areas of knowledge as presented in the guide has a rationale. Placed in a spectrum, the areas can be compared on many bases—kinds of justifications used, balance of ways of knowing involved, extent of agreement among professionals in the field, role of different perspectives. The knowledge ranging from mathematics, through natural and human sciences, history, the arts, to ethics can be examined for increasing kinds of complexity.

In sum, the order given in the subject guide is linear, but that does not mean that the thinking involved in exploring the topics is linear; discussions build on each other with increasing depth and possibility for interconnection. Creativity in teaching and learning does not reside in rearranging the order of course topics.

2. Alternative sequences for topics

The freedom to change the order of topics from what is given in the subject guide gives schools and teachers flexibility that may be extremely useful. It allows teachers to respond to factors in their own contexts, such as school schedules and student needs. It also allows teachers some creativity driven by their own interests and background. In some cases, it might also allow the TOK

course to be structured to work together with other programmes within a school, such as a school-wide treatment of a special topic fixed at a given point in a calendar.

One particular way of creating an alternative order is suggested within the subject guide in its section on “linking questions”. This section raises the possibility of sequences based on thematic threads: belief, truth, certainty, evidence, interpretation, explanation, technology, values and culture. Depending on how much of the TOK course is opened up by a particular thematic thread, the “linking questions” or, perhaps more accurately, “linking themes” can be used to structure the whole course or portions of it.

Thus, for example, the linking theme of “evidence” could readily involve all four ways of knowing in questions of how evidence is created and evaluated, and could lead to questions of creation and justification of knowledge in different areas. The degree to which evidence is the primary justification for knowledge and the extent to which scientific evidence yields to less rigorous forms of observation in some areas, and why, could provide grounds for the comparison of various areas of knowledge.

One drawback of the thematic approach, teachers will quickly recognize, is the tendency to force course topics to fit a theme even if doing so warps the definition of key terms (“evidence”) or illuminates some areas of knowledge much more effectively than others. It may well be that a single theme is insufficient for dealing effectively with the range of TOK course ideas, but that a theme could be used in combination with the more conventional order of the guide, or that two or three themes could be used more successfully to pull together the course.

In short, with a clear sense of the TOK concepts and skills to be developed and an understanding of the interconnections of course topics, a teacher may enter the course at any point and conclude at any other point, as long as the course ideas have been appropriately explored along the way. Almost any order permits connections to be built up, and different orders are likely to generate different comparative discussions. It could well be argued that shuffling and rearranging course topics does have a major advantage over always following the order in the guide, simply in terms of the refreshment that the changes can give the teacher.

Models and frameworks for thinking

To guide their planning, teachers may use a model of the course that highlights the essential features and their connections, giving a tool for thinking about course concepts and topic sequences.

1. Traditional diagram: Relationship of course topics

The diagram of the TOK course that has come to be known as the “traditional diagram” provides just such a tool for thinking. The knower (in the singular, and as part of a plural group) is placed in the centre, suggesting that people construct knowledge—people as individuals and as members of groups (for example, cultural groups, sports teams, professional associations). That knower in the centre is the TOK student (as an individual, as a member of groups) but can also be scientists, historians, or others as the course progresses.

Those knowers in the centre generate knowledge through using four dominant ways of knowing that are pictured as ringing them:

- sense perception
- emotion
- language
- reason.

What they create through these ways is the outer circle of the diagram, the areas of knowledge:

- mathematics
- natural sciences
- human sciences
- history
- the arts
- ethics.

The connections from one part of the diagram to another invite discussion.

In a manner compatible with TOK's aim of self-awareness, the traditional diagram is presented as being open to question itself and is supplemented in the 2006 subject guide with alternative visual models for the course.

2. Alternative overview: Emphasis on skills

As discussed in many a TOK class, the limitations of a model are the flip side of its usefulness—its simplification inevitably leaves out a lot of complexity and it stresses one set of interconnections rather than other possible ones.

Where the traditional TOK diagram stresses the knower(s) in the centre and invites connections between course topics, other models can be generated that place the emphasis instead on the course concepts and thinking skills. To stimulate further thinking, we have developed a version of just such a model as an appendix to this document. "A TOK teacher skills-based overview" gives a compressed picture of the TOK course, combining components of the familiar diagram with a list of skills to be developed. Planning the course using the traditional diagram may be most useful in sequencing topics. Then evaluating the organized sequence of topics using a skills-based model may help to nudge planning more effectively towards developing TOK thinking.

3. Frameworks for thinking: Some further use

As students respond to questions and pose their own, teachers will want to allow reflections to be explored and expressed in a variety of ways, depending on the students and the topic. Systematizing thinking can kill openness and a spirit of investigation.

However, some of the skills that students are developing can benefit from the distillation of their questions into a general approach that they are then able to apply for focused and purposeful inquiry. Visual pictures and schemes can help many students recall, build on and apply a conceptual overview and the skills of critical thinking.

To capture ideas that arise in discussion, the teacher may encourage students to create a framework whose details develop as the students do. In these days of computer text and image, it is particularly easy to create a framework whose content and shape evolve throughout the course—though a pencil-scrawled Mind Map® may be just as effective for many students.

We offer one example of this process of capturing ideas and building on them in the appendix "Evaluating Information". Appendix II A represents the results of an early discussion in the TOK course in which students are asked to assess the reliability of an article or speaker, and notes some broad ideas that the teacher and the class write down before they escape from memory. The page, early in the course, is largely empty. In further class discussions, students may bring back and develop these ideas (for example, as they critique articles from the media, YouTube videos with contrasting perspectives, or passages from history textbooks). In successive discussions, they will identify further questions to ask about sources, further knowledge issues that surround the knowledge claims, and further reflections on their own responses. Appendix II B represents the framework from A, filled in with many further ideas generated in discussion. The developed framework of II B, admittedly, is a simulation we have created with unnatural tidiness. It

demonstrates, though, the way in which a framework can be used to pull together many ideas that come up in class discussion. It becomes more than simply a set of notes. It becomes an increasingly sophisticated tool for students to use in subsequent evaluation of information.

With teacher guidance, students can develop their own frameworks for dealing with many class topics, to identify the kinds of critical questions that they would want to ask in the pursuit of knowledge. Some fruitful topics for such treatment include:

- investigating differing perspectives
- evaluating evidence
- searching for explanations.

Students might find it helpful to consider the TOK linking questions, for instance, in this way.

TOK inquiry in the classroom

In teaching awareness and skills rather than informational content, theory of knowledge (TOK) does offer teachers a challenge that is somewhat—but not entirely—different from what they are doing in their other IB subjects. Teachers reading the earlier section in this document on key concepts of the TOK course are likely to have responded with recognition of many of the aims of their own courses. What IB subject does not teach its own form of awareness and skills? What IB teacher does not expect students to think critically when evaluating an argument, or presenting and supporting one? What leader in creativity, action, service (CAS) does not treat self-awareness and reflection as significant? Indeed, TOK reinforces what other parts of the Diploma Programme are also doing, and vice versa.

What distinguishes TOK

What distinguishes the content of TOK from that of other IB Diploma Programme subjects is primarily the level of metacognitive generality on which it works. Whereas a science class or a literature class, for instance, develops the relevant subject awareness and skills in application to subject matter that should usually also be learned, TOK asks only about the ways in which the knowledge is gained, the skills and their role in the subject's methods of gaining knowledge, and the nature of the resulting knowledge. It then fits the methods of that science class into the methods and nature of the sciences in general and the methods of that literature class into the methods and nature of the arts in general. The actual subject matter of the science or literature course functions as the grounding for more general understanding and, thereafter, as a source of examples to illustrate the more general points.

In this way, TOK takes a conceptual overview of the methods and nature of all subjects (including CAS) in creating knowledge, and compares areas of knowledge in order to bring out their essential features, likenesses and differences. It fosters appreciation of the pursuit of knowledge and the contributions of all areas of knowledge to our understanding.

TOK places the knowledge gained in academic subjects and CAS within a broader picture yet, of how knowledge is gained in all areas of our lives. It deals with the question "How do I know?" at the level of a vast overview survey. In doing so, it helps students make sense of what they have learned and provides them with awareness and skills for building their future knowledge.

Basic TOK goals

Saying "TOK does this" and "TOK does that" is, of course, just a manner of speaking. The students and the teachers are the ones who are active.

As discussed earlier, the course is rooted in students' own experiences of knowing, expanded by exchange with others and classroom activities that push their ideas further. The teacher structures the inquiry that helps students develop their skills of investigating and thinking, steering them

towards a larger understanding of knowing in areas of knowledge and in non-academic areas of life.

Although there is no specific body of information that students must learn for TOK, the course is fairly challenging for students in the awareness and skills that it seeks to develop.

- Awareness that knowledge is alive with issues for exploration and built up by people asking questions and responding to them; different areas of knowledge have different kinds of questions that derive from the basic one "How do I know?" and different methods of responding to them.

- Recognition that knowledge claims are embedded in perspectives taken by different groups of people, that those perspectives may involve assumptions that are not conscious or articulated, and that diverse perspectives are enriching to explore and consider; those perspectives can be seen in the form of different theories or interpretations within academic disciplines or in the different points of view prevalent within a community or the world.

- Capacity to combine this openness to multiple perspectives with thoughtful critique of all, evaluating them for their values, knowledge claims, assumptions, justifications, arguments, conclusions, and implications for attitudes and actions.

Students, with the guidance of their teachers, should emerge from TOK with a conceptual overview of knowledge and the different ways people achieve it, and with skills that help them to continue to build their own knowledge with care throughout their lives. It reinforces the other parts of the IB Diploma Programme to give students a sound basis for positive engagement in the world. Or at least, such is our aspiration!

Profile of a TOK teacher

All these things are supposed to happen in a TOK class, but who makes it happen? Who is the ideal TOK teacher?

Is there a necessary background?

No specific background is necessary and no qualifying degree exists for teaching TOK. Some notions still linger from the early days of TOK's creation that courses in philosophy are a necessary background for teachers, probably reinforced by the name the course still carries—epistemology or theory of knowledge is a branch of philosophy. (The endearing little acronym TOK leaves such connotations behind.) Those notions may also assume that philosophy is always taught with a method of inquiry, and that only philosophy inquires into knowing. What a sadly limited view of all other disciplines!

Indeed, while philosophy is assuredly an appropriate background for a TOK teacher, all areas have their own methods of inquiry that give a teacher a familiar starting point for teaching TOK. The newest IB subject guides include a section identifying the kinds of questions their own subjects hold in common with TOK.

Certainly, TOK teachers benefit their classes greatly from increasing their own understanding of the ways in which areas of knowledge other than their own create knowledge. For teachers embracing the chance to be "lifelong learners" in the terms of the IB learner profile, TOK provides an opportunity for professional and possibly also personal growth.

However, teachers who are on the way to gaining an exciting holistic overview themselves must take caution: they must make sure that they use their learning to plan better activities and frame better questions for their students, rather than yielding to a temptation to tell their students all they've learned themselves so far—and thereby scotch students' own exploration.

Are there necessary qualities?

Ideally, every IB teacher is a lifelong learner in this way. In TOK, though, many of the attributes of the IB learner profile are more evident in that the essential process of education is laid bare. There is no subject content in the form of information, and so the process of questioning and responding stands out clearly.

Five of the profile characteristics are instantly and obviously relevant, though others could be argued to be so as well. Ideally, TOK teachers are open-minded, reflective inquirers and thinkers, and knowledgeable in the sense of developing a cross-disciplinary understanding. For teachers initially ill at ease with guiding inquiry rather than delivering information, a further profile attribute is relevant—they should be risk-takers. In many ways, they have to model the qualities they aim to develop in students.

Is teaching solo or as part of a team?

TOK teachers guide students to see connections between knowledge issues and their experiences of knowing in their lives, the immediate and shared experience being their learning in their IB subjects and in CAS. Whether a single teacher teaches the whole of the TOK course or whether it is broken into parts taught by a team of teachers is a school decision. Both ways have advantages.

Solo TOK teachers have the immense advantage of being able to build on past discussions throughout the course and to sustain thematic threads of ideas. They also have the flexibility to take paths through the course in response to student interest, mindful of the overview that ensures discussion of all of the topics of the course. For subject expertise, they draw out of their students what they are learning in their other courses, giving them the role of communicating the features of that knowledge.

To be able to link the TOK discussions most effectively with the areas of knowledge students are studying in their Diploma Programme courses, the solo TOK teacher will benefit from knowing what topics colleagues are treating in their own classrooms, and when. With some planned coordination, the TOK teacher and another subject teacher can arrange mutual reinforcement. In a sense, even solo TOK teachers are always part of a team; they support colleagues with heightened understanding of their particular ways of creating knowledge, and they gain in their own class from the teaching of their colleagues.

TOK teachers working structurally as members of a team to teach a single group of students have some advantages of their own. They can connect the knowledge issues of TOK with what students are studying in their own classrooms quite readily by being in both places themselves. They might also be able to bring their own subject's perspective to bear on TOK course topics in common, such as a biology teacher and an art teacher leading discussions on sense perception as a way of knowing, using stimulus material appropriate to their own areas.

If TOK is taught in this way, though, all members of the team need to have an understanding of the nature of TOK and work within an overview so that the course does not fragment counter-productively into isolated chunks. They have to be able to make connections from one part of the course to another in order to develop threads of ideas relevant to all.

The role of the TOK teacher

1. Stimulate

TOK teachers do not deliver knowledge for students to learn; they do not give students pre-packaged, static notes to memorize. Instead, they provide students with activities to stimulate them to make their own synthesis.[x] The spotlight is not on the teacher as the one who knows but on the students as the ones who are actively learning.

This does not mean, however, that the teacher should never give information on topics, show films, invite guest speakers, or give students articles to read, for instance.[xi] Many resources for ideas are

appropriate in the TOK classroom—as long as they are set within appropriate questions for students to pursue themselves.

2. Facilitate

TOK teachers are, to a large extent, facilitators. They set up activities to provoke thought and encourage interchange between class members, whether in collaborative small group work or in group discussion.

In discussion, they elicit student ideas, bring out the thoughts of all students as much as possible, nudge students to articulate and consider their ideas more fully, encourage them to consider direct counter-claims and alternative views, and lead debrief discussions to pull out the major points that contribute to building threads of TOK ideas. In facilitating the exchange of ideas in multicultural classrooms, they attempt to draw out differing cultural perspectives.

TOK teachers are not facilitators, however, in the sense that they simply follow where the group wants to go, solely helping discussion along. The teacher is active too.

3. Guide

TOK teachers are guides with goals and plans for reaching them.[xii] They foster a class culture within which students feel respected and safe to venture their thoughts. They have some overview of knowing themselves, and design activities to encourage students down paths of "structured inquiry"[xiii]. They are responsive to the paths students want to take as they make sense of knowledge questions in terms of their own experience, but can guide those paths in the broad direction of the course sequence of ideas.

As the course progresses, teachers can expect students to gain familiarity with the TOK way of questioning and thinking, and increasingly to explore effectively on their own.

Classroom challenges

As we have just said, the teacher is primarily a guide, balancing between spontaneity and structure, focusing inquiry and nudging it in the most relevant and fruitful directions. Many a new teacher, in this regard, might benefit from some warnings of common pitfalls in the attempt to create a balance between student and teacher control of inquiry.

1. Giddy question-chasing

Inquiry into knowing involves treating highly interconnected questions. Student discussion can roll off in any direction, chasing an idea, with question leading to further question. This student-driven rolling is one goal of a class based on inquiry. However, teachers have to be ready to create pauses to explore possible responses to questions raised, so that they are meaningfully posed. Teachers also need to be ready to guide students back to those questions most closely engaged with knowledge issues and most relevant to the topic at the time. Flexibility in response to student interest is important, but it is not possible to give serious discussion to everything all at once—and before the class ends.

2. Discussion that goes nowhere

It is generally fairly easy to create lively discussion on many of the topics of the course and to feel satisfied that students were really engaged as they exchanged ideas. However, unless that discussion is hooked up with ongoing topics or summarized in a way that allows students to add it to their growing understanding and overview, much of the benefit is lost. Debriefing a discussion in TOK terms, even lightly, can be significant in creating a sense of purpose for the course and broadly guiding its direction. Summing up its central points can also help to reinforce ideas to invoke in future lessons.

3. Getting swamped

As any new teacher will notice, the syllabus is full of questions, any of which could lead to a lifetime of study—they open huge areas of thought. Yet the course lasts only 100 hours, not 100 years. It is impossible to deal with every question, yet important to achieve some overview of the whole.

How can such a course be tackled? One step at a time!

Planning a TOK course is not solely a matter of deciding the sequence of topics. It is also a matter of considering what vocabulary to introduce for continued use ("knowledge claim", "justification", "empathy"), what ideas to lay down in lessons for future building, and what skills to try to develop from week to week. Later topics take less and less time when they increasingly draw on what has been discussed already. Moreover, each successive topic—whatever the order of topics in the course—makes more sense to students when connected with their growing facility and understanding. Students can approach successive parts of the course with growing ease as they employ concepts that are increasingly familiar.

For example, if the four ways of knowing (sense perception, emotion, reason and language) are treated before the areas of knowledge, many basic ideas on how knowledge is gained are established early in the course, ready to be applied and developed. When students have dealt with deductive and inductive reasoning, for instance, they have already considered the interplay of general ideas and particular examples before talking about the way knowledge is created somewhat differently in the sciences, history and literature. When they have explored emotion as a way of knowing, they have already considered imaginative engagement and empathy before they approach history, the arts or ethics; they will have considered creativity before they approach the generation of new ideas in all areas of knowledge. When they have already considered fallacies that involve all four ways of knowing, they have awareness and vocabulary for critical examination of the knowledge issues around them in their communities or in the media, as well as grounds for appreciation of the methods of different areas of knowledge for avoiding common pitfalls of thinking.

In this way, the course is cumulative in terms of both the topics discussed and the skills developed. There is never enough time in the 100 hours to deal with all the questions that could be posed, but with careful planning the central ideas of the TOK course can be significantly developed within that limited time.

Teaching methods

The theory of knowledge (TOK) course has ambitious aims and topics that involve all knowledge, but prescribes no fixed subject matter or activities. What activities, then, work best? The answer depends greatly on the particular teacher, students and context.

1. Doing and reflecting

By now it should be apparent that classroom activities most appropriate to TOK centre on the students' construction of their own knowledge.[xiv] Students should be stimulated to:

- question and reflect
- exchange ideas with openness to alternative or contrary views
- connect their own experience of knowing with the experience of other people
- consider and critique thoughtfully
- identify implications for responsibility and action in what they accept.

In TOK the students are active learners: they actually do things, rather than simply listening or reading. Simply doing things, however, will not guarantee learning. The doing must be coupled

with another, vital phase: reflecting on experience, learning from it in a way that can be carried towards the future. The best TOK teaching draws on a combination of **doing** and **reflecting**. Above all, it seeks to engage the student in the learning process. This engagement can be seen in different ways. It can refer to trying to ensure that lessons matter to the student (the "so what?" factor); it can relate to involving students in the design and process of the course. It can also involve a further, appealing notion: that the best lessons seek to engage different parts of the brain at the same time, through involving various of the TOK ways of knowing.[xv]

Typically, then, activities combine:

- an activity for stimulation of ideas
- students exchanging ideas
- teacher guiding discussion to stay on knowledge issues and develop exchange fruitfully
- some form of summary or debriefing to catch the thoughts and fit them into a growing picture.

Possibilities abound for the initial stimulation of ideas, for example:

- perceptual puzzles, Kuleshov effects and stories of surprisingly selective observation (to provoke discussion of sense perception as being not quite as straightforward as often imagined)
- classification activities involving objects (to lead to discussion of differing grounds for categories, and the various influences upon them); objects to be sorted can be multifarious for several possible classification schemes, or specific to senses, for example, "male" and "female" perfumes (to consider cultural constructions), or coloured paint chips across a spectrum (to consider classification and naming in languages)
- class games or drawing/reporting activities (to reveal selective observation, selective memory and selective record in order to lead to discussion of ways of knowing and factors that influence them in observation)
- articles or video clips from the media, for example, on medical breakthroughs, surveys or polls and their conclusions, historical revision, social problems (for class reading, possibly in small groups, to practise skills of critical evaluation and to raise particular knowledge issues for class discussion)
- comparative reading of passages selected from students' own textbooks for their IB courses (to discuss the expectations of language and accompanying representation in different subject areas)
- creation of rival media with different perspectives by class groups (to strengthen through activity their growing realization of how news is "created" in its selection and manner of presentation, how different perspectives are shown through different assumptions, values, knowledge claims and arguments, and how language, statistics, photographs, videos and other methods of representation can be used so that accounts of the same events appear quite different)
- students sharing their artwork or performing for the class, possibly using their creative work for a group 6 subject or CAS, or actual experience of concerts or art galleries (to further discussions on the arts)
- student role play in panel discussions, dramatized interviews or skit enactments of many possible topics (to explore particular knowledge issues, or demonstrate essential qualities of specific areas of knowledge).

This list is provided only to give a sense of an appropriate TOK class through a few examples. An activity is successful if students are active and engaged, explore knowledge issues effectively, and develop further their course skills and ideas. Out of fairly simple stimulus material can emerge some fairly sophisticated realizations and discussion, and a shared class activity can become a reference point for later discussion. Activities of classification or creating contrasting media, for example, remain relevant for the rest of the course, with more and more ideas built around them.

2. Individual reflection

A special word may be merited on activities that seem to break the mould. The reflection in TOK works primarily through the group, but can be supported by independent student reflection. Teachers may wish to give students time to engage with classroom material alone to formulate their thoughts in preparation for class discussion. Doing so can help to bring into discussion students who are not completely fluent in the classroom language or who are not quick to verbalize their thoughts. Individual reflective writing in the form of a TOK journal or TOK blog also gives students a chance to mull through course ideas in their own way, perhaps even shifting to visual rather than verbal means of communication.

3. Cultural perspectives

Teachers with students of a single cultural background, with very similar thinking on most topics, cannot draw on their students for exploring some kinds of perspectives as easily as teachers may do in international schools or other schools with diversity. To supplement what arises readily in class discussion, then, such TOK teachers may wish to find out what their colleagues are doing in other IB classes to treat different perspectives, and they may then introduce questions in TOK to make the link. It is entirely possible, for instance, that students are studying novels in their literature classes that encourage imaginative identification with different cultural points of view, or that in their history classes they may be examining differing interpretations based on a national or political group. TOK teachers might also seek out articles and video clips that introduce unfamiliar assumptions in a sympathetic way or might even use simulation games such as BafáBafá,[xvi] Barnga,[xvii] or others[xviii] as an unthreatening way for students to think about their own perspectives and their underlying assumptions. It may also be possible, in schools with easy access to the internet, for TOK classes from different parts of the world to set up cross-school discussions to expand the range of perspectives within the peer discussion group.

4. TOK and world issues

The application of TOK thinking skills to world issues also deserves a special word. It practises important lifelong skills—as long as the thinking skills are not drowned in information and description. All through the course, teachers and students are likely to introduce current media stories or community events as part of the normal fare of the TOK class. Identifying the knowledge issues and perspectives and examining them critically provides students with models for their own independent inquiry. Such engagement of TOK thinking with events in the real world prepares students for one of the assessment tasks—the presentation.

In a more extended treatment of a world issue or topic of global concern, the need becomes stronger to ensure that the inquiry into knowledge and the critical-thinking skills firmly frame the topic; background information is essential for understanding any issue, but the TOK focus has to remain on transferable TOK skills.

Teachers may wish to get ideas from material already available. These include, for example, a teacher blog[xix] on TOK and global citizenship and a few of the model lessons on the website of the IB community theme: sharing our humanity (particularly a recent one on global warming).[xx] The IB community theme, indeed, gives schools encouragement to treat knowledge of a global issue holistically, with a strong potential role for TOK in such an overview. A chapter in the *IB Theory of Knowledge Course Companion*[xxi], taking world hunger as its demonstration example, also reaches beyond theory of knowledge in its potential teamwork with other school programmes on global issues: its basic template for framing a global issue using TOK questions requires background research and planning, beyond the scope of TOK, in order to deal in a grounded way with ethical issues, critical evaluation of research, and implications for solutions. The interconnections between

TOK thinking skills, the research of the extended essay, and the experience of CAS may, indeed, provide an area for further IB thinking in the treatment of global issues.

Teaching resources

1. Resources specifically for TOK

In a course that draws widely on knowing in all areas of life as well as the academic areas of knowledge, teachers—especially new teachers—may find the wide-open spaces entirely too wide and too open. They may want specific lessons to adopt and material already prepared, both to get them launched and to give them models for their own creation of lessons. The current curriculum review group is giving attention to producing new teacher support materials, but in the meantime plenty already exist.

The online curriculum centre[xxii] gives access to numerous suggestions from other teachers and to discussion of course topics. Teachers are likely to find many ideas there suitable for their own classes.

Several TOK books also now exist. Although course books are often associated with delivering information rather than constructing students' own knowledge, recent TOK textbooks and the *IB Theory of Knowledge Course Companion*, all written by experienced TOK teachers, provide abundant ideas for student-centred lessons and background on where discussion may lead. Teachers might well acquire several of these as a resource library and consider using them judiciously with their students. The pedagogical challenge with these books, as with all course material, is to ensure that the course is driven by inquiry without questions or responses formulated in advance deadening exploration. This challenge can be met with planned use.

Many recent IB subject guides contain sections in their introductions on the connection between those subjects and TOK. These sections can be very helpful for TOK teachers in furthering discussion with colleagues regarding potential links between courses to be reinforced in class.

An IB publication called *Theory of Knowledge—Lessons from Around the World* (2000 and 2004) may also still be in circulation, though not currently available from the IB store. It gathered lessons from experienced IB teachers and presented them in a format designed to make them easy for other teachers to use. All of them involve some form of classroom activity framed by TOK questions.

2. Resources in the big, wide world

For a course that inquires into knowing, there is no end of resources.

Reflection should certainly draw on students' own experience of learning, with a goal of centring inquiry on the students themselves. Students bring plenty of past experience to class, from their learning in their other IB classes and CAS to their personal life experiences (for example, with language, culture, music, sports, technology or social interaction). While the inquiry will move beyond personal anecdote, many a good class can be galvanized by personal incidents and the personal relevance of the knowledge issues under discussion.

In order to raise knowledge issues and provoke discussion, teachers can also find many sources of stimulation in the everyday media. News sources, print or web, regularly carry numerous relevant stories (for example, challenges in pinning down the causes of particular diseases, breakthroughs or revisions in science, ethical dilemmas in legislation, new angles on historical incidents, experimentation in the arts, conflict over the facts of a particular incident or world condition). Editorials, blogs and video clips offer opinions that raise different perspectives on knowledge issues. Indeed, media coverage itself provides considerable material for class scrutiny of knowledge issues.

In selecting text passages or video clips for class use, teachers will want to avoid those that simply deliver information for students to absorb. The most effective articles for class use are not the ones that sum up ideas extremely well, leaving nothing much for students to add, but those that treat

knowledge issues in such a way as to open discussion. A good TOK class does not consist of students simply reading or viewing material; a good class lies instead in the relevant reflection and discussion that the material stimulates.

Not all resources for class are text-based or video-based, of course, and variety in the kinds of resources used is beneficial for class engagement. There are many possibilities for classroom activities—puzzles, games, creative activities, role plays and the like (see "Teaching methods"). Teachers planning the different topics within the TOK course will be aware of the kinds of knowledge issues they want to introduce for student consideration and the kinds of skills they want to build. They will choose class resources with an eye towards capturing students' interest and animating appropriate discussion.

Assessment

The assessment in any course should evaluate the knowledge that students have developed during the course. TOK is no exception.

1. Assessment criteria

In the case of a course that takes knowing itself as its subject, the assessment criteria may appear at first glance to be rather different from those of most other subjects. However, they are not at all unusual in expecting that students demonstrate a conceptual grasp of central course topics and course skills.

The conceptual grasp expected in TOK is treated in detail in "Metacognitive inquiry and TOK". We have identified the key concepts as:

- knowledge issues
- perspectives
- critical thinking
  - knowledge claims
  - assumptions
  - justification
  - implications.

Using those concepts actively in class involves developing appropriate skills. These key concepts and accompanying skills are clearly recognizable in the assessment criteria for both the essay and the presentation in TOK. Although the current form of assessment is under consideration by the curriculum review group, it is safe to say that its essential concepts and skills will be preserved.

The assessment criterion not touched on explicitly so far in this document is the communication of ideas. Although evaluation requires student demonstration and hence communication, that communication takes different forms in the two different assessment tasks, one written and the other oral.

2. Assessment tasks

Where the assessment criteria distill the educational goals of the course, the particular tasks chosen for assessment are meant to allow students to demonstrate how well they have achieved them. The two tasks currently expected allow students to demonstrate complementary aspects of their understanding.

TOK essay

The essay asks students to respond to one question from an assigned list of ten titles (essay topics), all of which involve some conceptual overview of knowledge. The essay is expected to present a general argument making comparative connections between course topics (knowing, ways of knowing, areas of knowledge) and to develop and exemplify points through reference to particular knowledge. It evaluates the students' capacity to think broadly, connect ideas on different ways of knowing and areas of knowledge, and synthesize them into arguments of their own.

The TOK essay is not unlike essays in other IB subjects in its demand for a well-considered and sustained response demonstrating course understanding. It differs mainly in the level of generality expected of its argument, as it asks comparative meta-questions about knowledge itself.

TOK presentation

Where the essay demands a high-level overview of knowledge issues, the class presentation demands a close-up on a specific example of a knowledge issue in a real-life situation. In a sense, the presentation reverses the general-to-particular thinking of the essay—the essay demands that a general argument on knowledge issues be grounded in particular examination and examples; the presentation, conversely, takes a particular example and pulls out of it the general knowledge issues. It evaluates students' capacity to apply TOK thinking to real-life situations in the world around them, grounded in their own experience. At the same time, it gives them further practice in this kind of thoughtful engagement with events in the real world.

The communication skills differ somewhat between the two assessment tasks, as one is written and the other is oral, but both require that the communication be clearly organized.

These two assessment tasks are currently under review by the curriculum review group to ensure that assessment takes the most appropriate and effective form for students.

TOK within the IB Diploma Programme

TOK within the hexagon core

Within the core of the IB hexagon theory of knowledge (TOK) is centred between creativity, action, service (CAS) and the extended essay. These three components of the IB Diploma Programme are clustered in the centre in part because they are required, but also because they are not equivalent to the subjects that ring them. What is the relationship, if any, between these anomalous elements?

Viewed from the perspective of TOK, the other two have an immediate relevance in providing experiences of knowing that contribute to TOK discussions—experiences and knowledge questions that may be different from those that emerge from the academic subjects.

1. TOK and the extended essay

TOK and the extended essay both reinforce the skills of inquiry specific to a subject area, but they differ markedly in their scope. They move in opposite directions from the knowledge given by the IB subjects. The extended essay moves in to examine a particular topic within a particular subject more closely, while TOK moves back to consider a subject's knowledge more broadly.

- In their extended essays, students seek out and evaluate sources; in TOK they learn to examine sources of knowledge more critically.

- In their extended essay, students gain new knowledge for themselves; in TOK they consider how the knowledge of others becomes integrated into their own personal knowledge.

- In their extended essay, students learn the academic conventions of acknowledging sources; in TOK they consider whether knowledge can be owned and what the justifications and implications might be of "intellectual property" in copyrights or patents.

- In their extended essay, students learn to apply the research skills and expectations of presentation of the particular subject; in TOK they consider how the subject builds and presents its knowledge.

The broad inquiry skills of TOK and subject-specific inquiry skills are both applied in the extended essay in the student's own experience of turning personal inquiry into personal research, independently. That personal experience of research provides, at the same time, further awareness of seeking knowledge that is relevant to discussion in TOK class.

2. TOK and creativity, action, service (CAS)

Theory of knowledge brings CAS into its classroom discussion as readily as it draws on the academic subjects, to enrich the students' growing overview of what it means to know. The learning approach of CAS stresses experiential knowledge—students learn about themselves as human beings, both as individuals and in relation to others, through personal experience of creativity, action and service.

Experience and reflection

Students find out about themselves through doing, often through stretching themselves to take on experiences previously outside their experience. The strength of these CAS experiences often lies in their capacity to startle. The student who discovers an unexpected ability as an ice skater could never have acquired this self-knowledge through classroom reflection. Students who work with disadvantaged members of society may discover personal capacities for communication and support they did not know they possessed, and gain at the same time an increased respect for the people they are helping and their strengths.

There is an analogy here with the ancient examples of learning to swim or ride a bicycle: you can read or talk about these things as long as you like but you will only really learn what's involved through doing it, through gaining a feel for what works best (sports coaches talk of developing "muscle memory"). This kind of learning, this way to knowledge, can be argued to work largely through sense perception and emotion (bypassing reason/the intellect), unlike most students' more dominant experiences of academic subjects. CAS, therefore, and its consideration in TOK, could be argued to provide a counterbalance to overly rational accounts of learning and knowledge.[xxiii]

Both CAS and TOK expect experience to be followed by reflection, but of a different kind and scope. In CAS, student reflection is focused on their own learning.

- "What did I learn?"
- "How can I generalize this to other situations I might meet?"

In TOK, reflection on CAS is focused at a higher level of generality on the knowledge students have gained. It asks how knowledge gained through personal experience compares with knowledge gained from others.

- "Does it use different ways of knowing, or perhaps the same ways differently?"
- "How reliable is it as knowledge?"
- "How does it affect my other knowledge?"
- "Does it carry implications for attitudes and future actions?"

Broadening ideas of "knowing"

TOK may also draw on the three components of CAS for ideas on knowledge relevant to particular parts of its course and for a synthesis of knowledge that crosses conventional subject boundaries.

The component of **creativity** may raise questions about ways in which creativity is involved in renewing knowledge in all areas (for example, a new proof in mathematics, a fresh hypothesis or

new theory in the sciences, or a revised interpretation of an event in history). It has special relevance in discussion of the arts, especially since not all students undertake a subject in IB group 6 within their choice of IB subjects. Their personal experience of creating their own paintings, dance, theatre production, writing, or the like can ground TOK discussion of this area of knowledge. Students may even be surprised to discover the range of ways of knowing involved in creation.

The component of **service** particularly raises knowledge issues in the area of knowledge of ethics, of how human beings should treat each other, even if they do not always do so. In undertaking activities with children with special needs, for example, or providing companionship for the aged and lonely, or responding to community needs through cleaning and building, students gain a grounding in personal response and reflection that combines with their other life experiences to anchor TOK exploration of ethical knowledge in a variety of ways:

- what it means to make the world a "better" place (from different perspectives)
- what kinds of arguments can be made for responsibility to others (their justifications and their complexities)
- what implications for action might exist for students accepting such a responsibility for themselves.

Students' own observations and emotions can make important ethical issues less remote and cerebral and bring home the connection with their own lives.

The component of **action** raises, again, numerous questions of knowledge, perhaps notably the distinction between knowing that something is the case and knowing how to do something. TOK questions on knowing how to play a team sport, for instance, can open up consideration of different forms of human ability, even different forms of talent or genius. Knowing how to respond to social need with appropriate action, also experiential in CAS, could be argued to bring together almost all other forms of knowledge in its combination of understanding and application:

1. understanding the background
2. identifying the problems from different perspectives
3. gathering accurate further information
4. tracking down causes and figuring out solutions
5. planning ethical and practical action
6. communicating with others to include them and gather support
7. cooperating with others to do the action
8. fulfilling any consequent obligations
9. following up with appraisal towards learning to do better next time.

Clearly, this component of the CAS programme, like the others, can provide students with some fine TOK reflection on differing forms of knowing and the way they combine in practice, in knowing, in their lives.

3. The core trio

The three components of the IB core do come together in very complementary ways in the treatment of global issues:

- TOK provides high-level skills of inquiry, transferable from issue to issue
- the extended essay provides practice in research to learn more
- CAS provides experience, including experience of planning and carrying through projects.

These three, together, help students to ground their knowledge in their own experience and develop skills for their future lives.

TOK within the hexagon as a whole

TOK sits in the centre of the hexagon, and rightly so if one reads that central position as emphasizing the core nature of what it attempts in terms of student education. In TOK, students distill the inquiry of the different IB subjects in their exploration of the nature of knowledge and the differing forms it might take. They also compare the academic knowledge of the subjects with the more experiential knowledge of CAS, seeing common elements and divergences for a larger picture of knowing. Students balance their experience of close-up research in the extended essay with a more panoramic view of learning and knowing.

The hexagon, of course, is only a diagram, a useful schematization of IB requirements. Like all such diagrams, it clarifies one set of connections by leaving out others not relevant to its purposes. We have just claimed that TOK is rightly placed in the centre of the Diploma Programme hexagon, accepting the diagram as given and reading it in our own way. However, it is part of the role of TOK not just to see the usefulness of such visualization but also to consider unexpressed connections and alternatives. Ultimately, TOK cannot be seen as so neatly separated from all the other knowledge that surrounds it in that diagram. The course depends to a large extent on the other parts of the Diploma Programme for its own grounding, and it reinforces and supports the other parts in its reflection and development of thinking skills. Perhaps paradoxically, one of the distinguishing features of TOK is that it can blend so well with all the other parts of the IB student's education.

Conclusion: TOK and the global perspective

Clearly, theory of knowledge supports the aims of the International Baccalaureate in its contributions in numerous ways to educating students who, we hope, will graduate as internationally minded individuals and make a positive contribution to the world. Much of its contribution is reinforcement and appreciation of the learning done elsewhere in the IB curriculum. However, it also heightens that learning in a way all its own.

In its teaching methods, it should help students build their awareness of what they are learning and make sense of it all, with a conceptual overview that breaks down conventional barriers between disciplines, and between areas of knowledge and knowledge in the world, for some understanding of the whole. Rooted in their own experience, this capacity for comparison and recognition of their own present knowledge within a bigger picture contributes, we would venture, to:

- flexibility in students' thinking
- ability to synthesize ideas from different areas
- appreciation of connections between details and the large picture.

Theory of knowledge probably contributes most, though, in cultivating habits of mind.

In dealing with **knowledge issues**, it encourages students toward a real engagement with inquiry, not daunted by complexities.

In dealing with **perspectives**, it encourages students to listen to what others are saying, to try to understand what they really mean and why, and to formulate and articulate their own views.

In dealing with **critical thinking**, it encourages students towards thoughtful evaluation of knowledge claims and perspectives in the process of most reliably continuing to build their own knowledge; it further encourages them to recognize the implications of what they know for attitudes and action.

Ultimately, this is our hope: that no matter what our IB graduates do in their future lives, these habits of mind will help to make them valuable members of their communities and valuable citizens of the world.

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[i] *IB learner profile booklet*. 2009. P 5.
http://www.ibo.org/programs/profile/documents/Learnerprofileguide.pdf

[ii] Boyd Roberts. October/November 2005. "Response to feature article #2". *IB Research Notes: Information for the IB research community*. Vol 5, number 3.

[iii] *IB learner profile booklet*, page 1.

[iv] *IB learner profile booklet*, page 5.

[v] International Baccalaureate. 2002. *A continuum of international education: The Primary Years Programme, the Middle Years Programme and the Diploma Programme*. Geneva, Switzerland. Zidao Communication. Pp 11–12.

[vi] International Baccalaureate. 2007. *Making the PYP Happen: A curriculum framework for international primary education*. Cardiff, UK. P 6.

[vii] For more on constructivist learning see:
Windschitl, Mark. 2002. "Framing Constructivism in Practice as the Negotiation of Dilemmas: An Analysis of the Conceptual, Pedagogical, Cultural, and Political Challenges Facing Teachers". *Review of Educational Research*. Vol 72, number 131.
Also, Windschitl, Mark. 1999. "The Challenges of Sustaining a Constructivist Classroom Culture". *Phi Delta Kappan*. Vol 80, number 1. Pp 751–7.
Also, John Bransford, Ann Brown and Rodney Cocking (eds). 2000. *How People Learn: Brain, Mind, Experience and School*. Washington, DC. National Academies Press.

[viii] See the *Theory of knowledge guide*, "Nature of the subject", page 3.

[ix] See Robert Marzano, Debra Pickering and Jane Pollock. 2001. *Classroom Instruction that Works*, and, *A Handbook for Classroom Instruction that Works*. Alexandria, VA. Association for Supervision and Curriculum Development.

[x] "A growing number of teachers are embracing the fundamental ideas of constructivist learning—that their students' background knowledge profoundly affects how they interpret subject matter and that students learn best when they apply their knowledge to solve authentic problems, engage in 'sense-making' dialogue with peers, and strive for deep understanding of core ideas rather than recall of a laundry list of facts." Mark Windschitl, "The Challenges of Sustaining a Constructivist Classroom Culture", page 751.

[xi] "Experts can continue to be experts, but their role changes to one of consultant or collaborator rather than source of wisdom and truth." Cunningham, Donald J. 1992. "Beyond Educational Psychology: Steps Toward an Educational Semiotic". *Educational Psychology Review*. Vol 4, number 2. P 191.

[xii] "As a number of educators are increasingly arguing … providing explicitness and structure as

necessary for students in the teaching and learning of basic information, concepts, and skills need not equate with decontextualized learning of meaningless skills, passive learning, or the teaching of gradually accruing basic skills as a prerequisite to higher order thinking and learning." Karen R. Harris and Patricia A. Alexander. 1998. "Integrated, Constructivist Education: Challenge and Reality". *Educational Psychology Review*. Vol 10, number 2. P 120.

[xiii] See *Making the PYP Happen*, page 6.

[xiv] See Mark Windschitl, "Framing Constructivism", page 137.

[xv]There is an interesting connection here with recent research. See, for example, Mary Helen Immordino-Yang and Antonio Damasio. 2007. "We Feel, Therefore We Learn: The Relevance of Affective and Social Neuroscience to Education". *Mind, Brain, and Education*. Vol 1, number 1. Pp 3–10.

[xvi] For example, BafáBafá http://www.simulationtrainingsystems.com/schools-charities/bafa.html.

[xvii] http://www.interculturalpress.com/store/pc/home.asp.

[xviii] http://www.educ.uvic.ca/faculty/hfrance/Simulation%20Games.htm.

[xix] For an example of framing current social discussion in TOK terms, see Eileen Dombrowski, "Aid to Africa: an approach to analyzing perspectives", blog TOK Meets Global Citizenship, Triple A Learning, April 11, 2010. http://blogs.triplealearning.com/2010/04/diploma/dp_tokglobal/aid-to-africa-an-approach-to-analyzing-perspectives/ and its teacher comment by Mike Watson. See also the follow-up "why Moyo annoys me: about knowledge" April 15. http://blogs.triplealearning.com/2010/04/diploma/dp_tokglobal/why-moyo-annoys-me-about-knowledge/.

[xx] For its careful control of TOK thinking and support for teachers, see particularly John Kamau and Julian Kitching, "Climate change: A Theory of Knowledge Lesson for Earth Day, 22 April", IB Community Theme website. http://communitytheme.ibo.org/eng/global-lessons-and-activities-2010-earth-day-april-22.

[xxi] See Eileen Dombrowski, Lena Rotenberg and Mimi Bick. 2007. *IB Theory of Knowledge Course Companion*. Oxford, UK. Oxford University Press.

[xxii] Online curriculum centre (OCC) http://occ.ibo.org/ibis/occ/guest/home.cfm.

[xxiii] This territory is explored in Malcolm Gladwell's *Blink*. 2006. London, UK. Penguin Books. Gladwell is one of those who have brought Damasio and his collaborators' work to a popular audience.