

Theory of knowledge

First examinations 2008

Diploma Programme

Guide



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International Baccalaureate Organization

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Diploma Programme
Theory of knowledge—guide

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IBO mission statement

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

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

These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.

IB learner profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

IB learners strive to be:

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

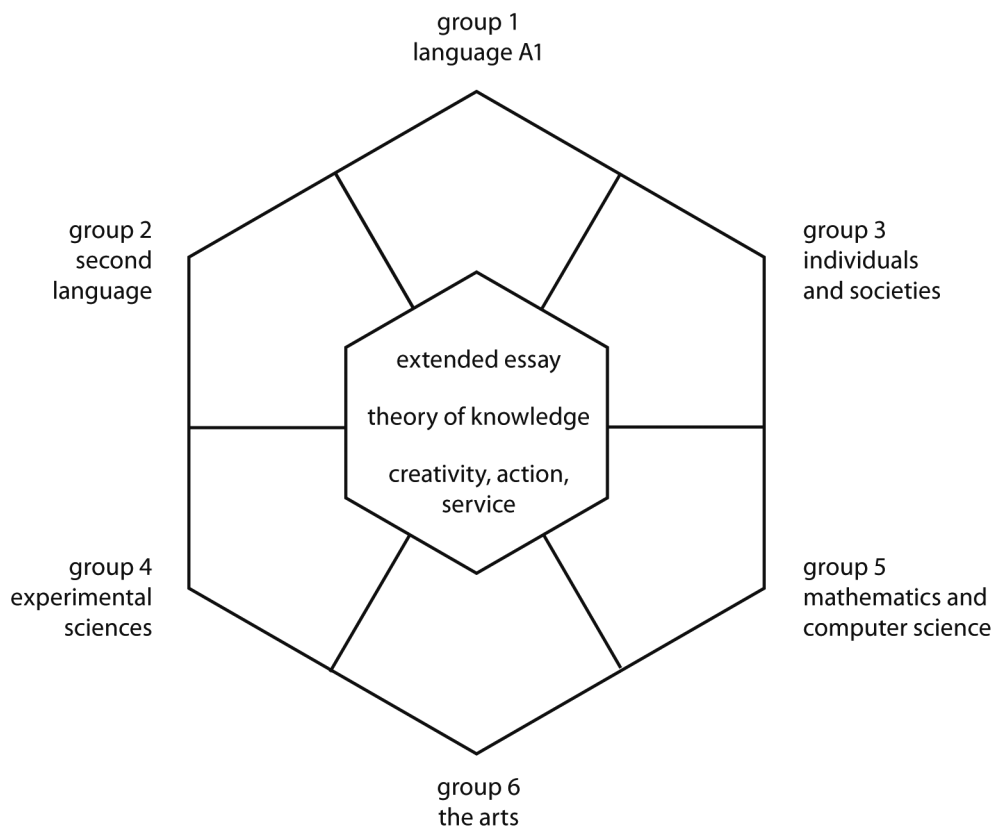
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Introduction

The International Baccalaureate Diploma Programme is a rigorous pre-university course of studies, leading to examinations, that meets the needs of highly motivated secondary school students between the ages of 16 and 19 years. Designed as a comprehensive two-year curriculum that allows its graduates to fulfill requirements of various national education systems, the Diploma Programme model is based on the pattern of no single country but incorporates the best elements of many. The Diploma Programme is available in English, French and Spanish.

The programme model is displayed in the shape of a hexagon with six academic areas surrounding the core. Subjects are studied concurrently and students are exposed to the two great traditions of learning: the humanities and the sciences.



Diploma Programme students are required to select one subject from each of the six subject groups. At least three and not more than four are taken at higher level (HL), the others at standard level (SL). HL courses represent 240 teaching hours; SL courses cover 150 hours. By arranging work in this fashion, students are able to explore some subjects in depth and some more broadly over the two-year period; this is a deliberate compromise between the early specialization preferred in some national systems and the breadth found in others.

Distribution requirements ensure that the science-orientated student is challenged to learn a foreign language and that the natural linguist becomes familiar with science laboratory procedures. While overall balance is maintained, flexibility in choosing HL concentrations allows the student to pursue areas of personal interest and to meet special requirements for university entrance.

Successful Diploma Programme students meet three requirements in addition to the six subjects. The interdisciplinary theory of knowledge (TOK) course is designed to develop a coherent approach to learning that transcends and unifies the academic areas and encourages appreciation of other cultural perspectives. The extended essay of some 4,000 words offers the opportunity to investigate a topic of special interest and acquaints students with the independent research and writing skills expected at university. Participation in the creativity, action, service (CAS) requirement encourages students to be involved in creative pursuits, physical activities and service projects in the local, national and international contexts.

First examinations 2008

Nature of the subject

It is a commonplace to say that the world has experienced a digital revolution and that we are now part of a global information economy. The extent and impact of the changes signalled by such grand phrases vary greatly in different parts of the world, but their implications for knowledge are profound.

Reflection on such huge cultural shifts is one part of what the TOK course is about. Its context is a world immeasurably different from that inhabited by “renaissance man”. Knowledge may indeed be said to have exploded: it has not only expanded massively but also become increasingly specialized, or fragmented. At the same time, discoveries in the 20th century (quantum mechanics, chaos theory) have demonstrated that there are things that it is impossible for us to know or predict.

The TOK course, a flagship element in the Diploma Programme, encourages critical thinking about knowledge itself, to try to help young people 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 this 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, like: What do I claim to know [about X]? Am I justified in doing so [how?]? Such questions may initially seem abstract or theoretical, but TOK teachers bring them into closer focus by taking into account their students’ interests, circumstances and outlooks in planning the course.

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. Connections may be made between knowledge encountered in different Diploma Programme subjects, in CAS experience or in extended essay research; distinctions between different kinds of knowledge may be clarified.

Because the subject matter of the course is defined in terms of knowledge issues, there is no end to the valid questions that may arise in a TOK course. This guide consists mainly of questions that have been found to stimulate appropriate TOK inquiry. It would not be possible or desirable to include them all in a course of 100 hours spread over the two years of the Diploma Programme, though it is expected that all sections of the guide will be covered to some extent.

The guide is organized in four broad categories: knowledge issues, knowers and knowing; ways of knowing; areas of knowledge; and linking questions. The categories are not intended to indicate a teaching sequence. There are many different ways to approach TOK. A successful course will:

- build on students’ own experience and involve them actively in the classroom
- ensure that students understand the purpose of TOK and its central role in the Diploma Programme

- allow the teacher to model the values of curiosity, thoughtful inquiry and critical thought
- have a structure that is clear to the students
- meet the objectives of TOK
- ensure that students understand and are prepared for the assessment tasks.

No teacher can be an expert in every field, and the sheer scope of the TOK course is daunting. Students also can be awed by the size of the questions they are considering. Both teachers and students need the confidence to go a little—not too far—outside their usual “comfort zones”. Then, with a spirit of inquiry and exploration, they can begin to share the excitement of reflecting on knowledge.

Relationship to Diploma Programme subjects and CAS

Diploma Programme subject guides are reviewed on a seven-year cycle. As new guides emerge, they will include references to the relationships between their subjects and TOK. TOK’s own relationship to subjects, and to CAS, makes up much of this guide. Nevertheless, it may be appropriate to mention one or two principles here.

Students experience both TOK and their Diploma Programme subjects, so it is advisable that the teachers of each have some idea of what the others are doing. Indeed, there can be reciprocal gains from shared understandings. As well as making connections with TOK questions (knowledge issues) as they work through their own courses, subject teachers may suggest some theoretical concerns that could be taken further in the TOK classroom. Reflection on CAS experiences includes a focus on what new knowledge students have learned. Conversely, TOK teachers will often seek to ground discussion of knowledge issues in actual examples taken from students’ experience elsewhere in the Diploma Programme.

International dimensions

In many ways TOK is ideally placed to foster internationalism, in close harmony with the aims of the IB learner profile. The TOK aims embody many of the attributes needed by a citizen of the world: self-awareness; a reflective, critical approach; interest in other people’s points of view; and a sense of responsibility.

Global controversies often rest on significant knowledge issues that can provide useful starting points for TOK explorations, depending on students’ interests and awareness. TOK activity, in turn, can contribute significantly to the understanding of these large questions.

Aims and objectives

Aims

The aims of the TOK course are to:

- develop a fascination with the richness of knowledge as a human endeavour, and an understanding of the empowerment that follows from reflecting upon it
- develop an awareness of how knowledge is constructed, critically examined, evaluated and renewed, by communities and individuals
- encourage students to reflect on their experiences as learners, in everyday life and in the Diploma Programme, and to make connections between academic disciplines and between thoughts, feelings and actions
- encourage an interest in the diversity of ways of thinking and ways of living of individuals and communities, and an awareness of personal and ideological assumptions, including participants' own
- encourage consideration of the responsibilities originating from the relationship between knowledge, the community and the individual as citizen of the world.

Objectives

Having followed the TOK course, students should be able to:

1. analyse critically knowledge claims, their underlying assumptions and their implications
2. generate questions, explanations, conjectures, hypotheses, alternative ideas and possible solutions in response to knowledge issues concerning areas of knowledge, ways of knowing and students' own experience as learners
3. demonstrate an understanding of different perspectives on knowledge issues
4. draw links and make effective comparisons between different approaches to knowledge issues that derive from areas of knowledge, ways of knowing, theoretical positions and cultural values
5. demonstrate an ability to give a personal, self-aware response to a knowledge issue
6. formulate and communicate ideas clearly with due regard for accuracy and academic honesty.

TOK diagrams

The traditional TOK diagram

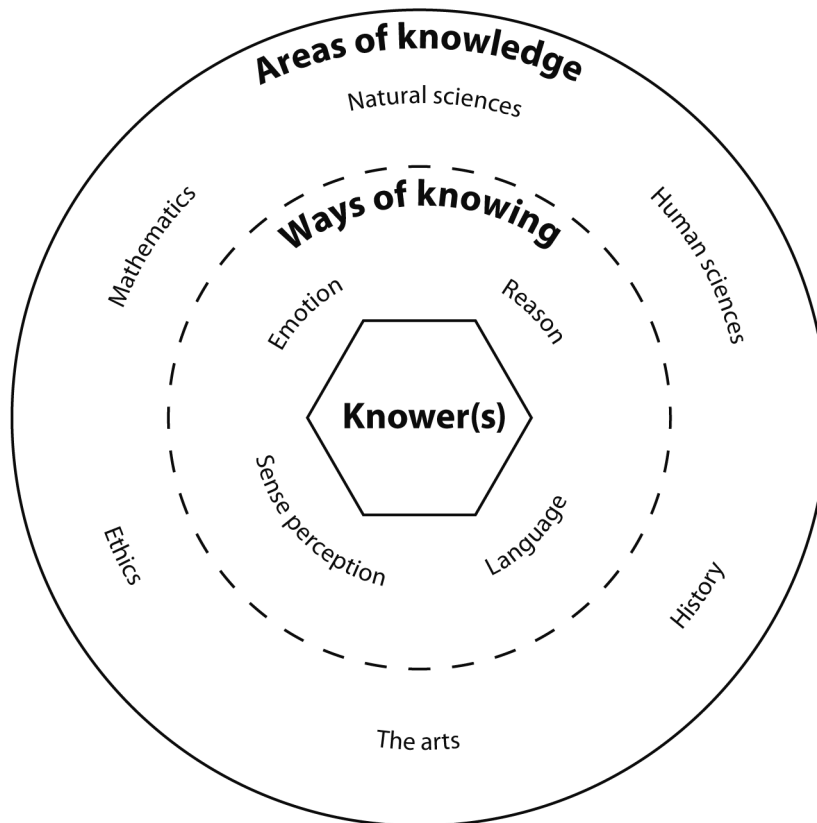


Figure 1

Teachers and students may find figure 1 useful as a pictorial representation of the TOK course.

Because the course is centred on student reflection and questioning, the diagram places the knower(s), as individuals and as groups, at the centre.

Surrounding the knower(s), four ways of knowing are identified, which permeate an exploration and interpretation of the world: the receipt of stimuli through sense perception, affected, perhaps, by an emotional and spiritual dimension labelled as emotion, formulated and expressed through language, and shaped by attempts, through reason, to seek order and clarity.

Within the perimeter, areas of knowledge are identified, which represent a classification of knowledge into subject areas, many of which the student pursues in the Diploma Programme. Six such subject areas are included: mathematics, natural sciences, human sciences, history, the arts, and ethics. No solid barrier, however, separates the ways of knowing and the areas of knowledge, because it can be maintained that the questions “How do I know?” (pertaining to ways of knowing) and “What do I know?” (pertaining to areas of knowledge) interact.

These three elements of the diagram correspond to three of the major divisions of the guide that follow: knowledge issues, knowers and knowing; ways of knowing; and areas of knowledge. Teachers may wish to structure their TOK courses accordingly.

The order in which the topics may be approached is flexible, however, and many entry points and sequences are possible. Teachers becoming acquainted with the TOK course for the first time may feel more confident if they begin with topics with which they are already familiar. Nevertheless, experimenting with conceptual structures other than this diagram, but dealing with the same TOK questions, may equally well fulfill the course aims and enable students to meet the objectives, and is encouraged.

The linking questions are intended to provide not only links for a course based on the above diagram, but to open up possibilities for approaches using alternative structures. It is left to teachers to design their courses within whatever frameworks they prefer.

Other possible TOK diagrams

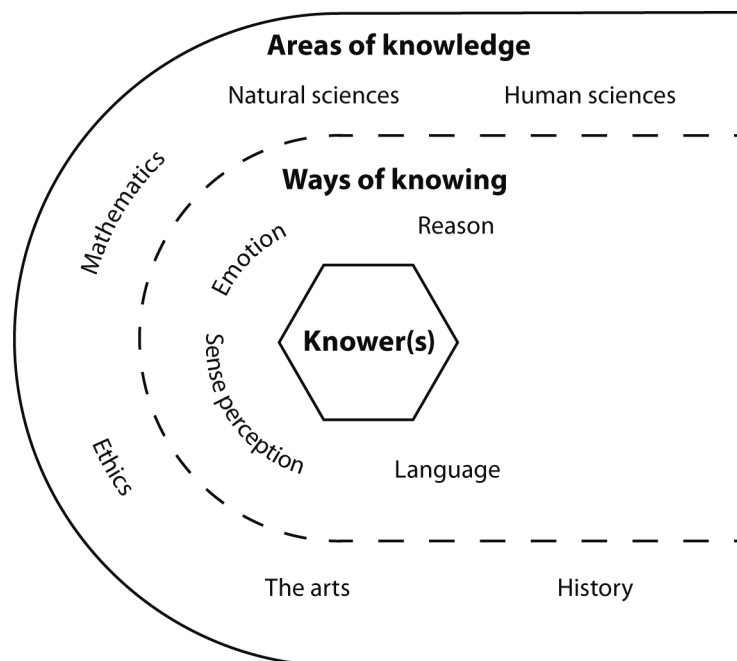


Figure 2

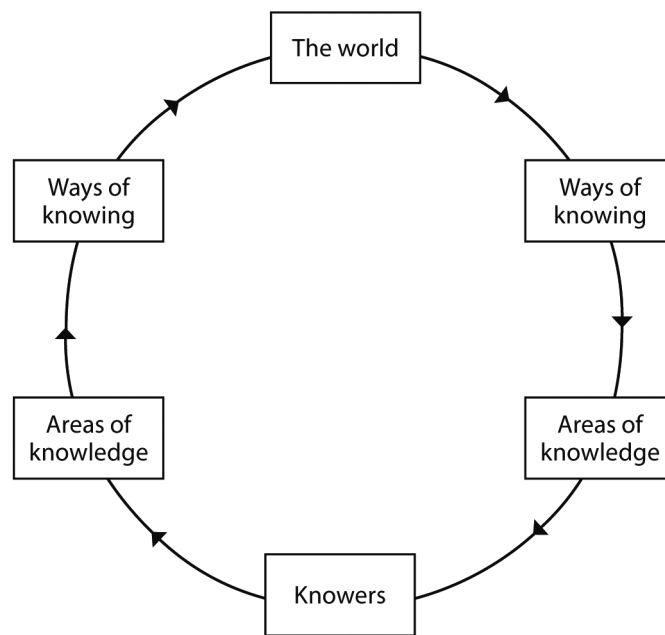


Figure 3

Teachers and students may find it useful to consider the different implications, advantages and disadvantages of these other representations. For example, does the explicit “openness” of figure 2 to other ways of knowing and areas of knowledge imply a different view of knowers themselves? Or, in figure 3, does our disciplinary knowledge not only influence but actually constrain how we can observe, understand and act upon the world?

Are there other, better ways of depicting these knowledge relationships, perhaps ones that express different cultural understandings?

Knowledge issues, knowers and knowing

“The time has come,” the Walrus said,
“To talk of many things:
Of shoes—and ships—and sealing-wax—
Of cabbages—and kings”

Lewis Carroll

People know many things: they know when they are cold, or sick; they know if they are sad or happy, lonely or in love; they know how to make fire; they know that the sun will set and rise.

Nonetheless people rarely stop to think about the processes by which knowledge is produced, obtained or achieved, nor about why, under what circumstances, and in what ways knowledge is renewed or reshaped by different individuals and groups at different times or from different perspectives or approaches.

The questions in this guide are meant to provide opportunities to pause and reflect upon the complexity and richness of knowledge and the process of knowing, on the scope and limits of knowledge, as well as on the roles and responsibilities that knowledge may bring to us as individuals, groups or communities. As such, these questions focus on knowledge issues. The use of this term “knowledge issues” is an expressly wide one, the purpose of which is to allow students to undertake an exploration of a diversity of TOK questions that are relevant to them in their specific context. Precisely because of its breadth, however, it is important to provide guidance for teachers and students as to what is and, importantly, what is not a knowledge issue.

Knowledge issues

Knowledge issues are questions that directly refer to our understanding of the world, ourselves and others, in connection with the acquisition, search for, production, shaping and acceptance of knowledge. These issues are intended to open to inquiry and exploration not only problems but also strengths of knowledge. Students sometimes overlook the positive value of different kinds of knowledge, and the discriminatory power of methods used to search for knowledge, to question it, and to establish its validity. Knowledge issues can reveal how knowledge can be a benefit, a gift, a pleasure and a basis for further thought and action, just as they can uncover the possible uncertainties, biases in approach, or limitations relating to knowledge, ways of knowing, and the methods of verification and justification appropriate in different areas of knowledge.

Two examples:

- Consider the question, “What is the value of distinguishing between what we know and what we don’t know?” In the context of problems of knowledge, the emphasis is likely to be on the good reasons we have for doubting whether the lines we draw between the two are as clear as we sometimes suppose them to be. In contrast, in the context of knowledge issues, the reasons we have to maintain the legitimacy and usefulness of the distinction are likely to come to the fore.
- Alternatively, consider the question, “Is there one way of knowing that is best for acquiring knowledge?” In the context of problems of knowledge, the emphasis is likely to be on why over-reliance on or confidence in each way of knowing would be unwise; in the context of knowledge issues, reasons for relying on or trusting ways of knowing should also be considered.

In the broadest understanding of the term, knowledge issues include everything that can be approached from a TOK point of view (that is, in accordance with the TOK aims and objectives as they are formulated) and that allows a development, discussion or exploration from this point of view. For example, a simple question that is often raised by students, “Are teachers’ course handouts and textbooks always right?”, can be treated as a knowledge issue when correctly framed in the context of TOK aims and objectives. On the contrary, it can be the prompt for entirely trivial answers that have little or nothing to do with TOK.

It is to be expected that a good treatment of many knowledge issues will necessarily deal with several aspects described above and that these can be interwoven in different, equally relevant ways. For this reason the treatment of knowledge issues can be distinguished from other issues that might arise in the context of a particular subject area. For example, a consideration of sense perception exclusively from the point of view of the psychology or biology of perception is not a TOK treatment of a knowledge issue.

Nature of knowing

- In English there is one word “know”, while French and Spanish, for example, each has two (savoir/connaitre and saber/conocer). In what ways do various languages classify the concepts associated with “to know”?
- In English, French, Spanish or Chinese, for example, what is the relationship between the different ways of expressing “know”: “they know of it”, “they know about it”, “they really know it”, “they know that person”, “they know that this is so”, “they know how to do it”? Are there other ways of using the verb “to know”?
- How do “believing that” and “believing in” differ? How does belief differ from knowledge?
- What are the differences between the following: information, data, belief, faith, opinion, knowledge and wisdom?

Knowledge communities

- In the TOK diagram, the centre is represented as both an individual and a group. To what extent can we distinguish between knowing as an individual and knowing as a group or community enterprise?
- How much of one’s knowledge depends on interaction with other knowers?
- Are there types of knowledge that are specifically linked to particular communities of knowers?

- To what extent can we act individually in creating new knowledge? What are the strengths of working in a knowledge community? What are the dangers?
- Is common sense just what is taken for granted in a community? How can we decide when to question common sense?
- Presented with the belief system of a community of knowers, how can we decide what we personally believe? How can we decide which beliefs we ought to check further? In the end does it just amount to a question of trust? If so, how can we decide who to trust, and on which issues?
- Do we need to grow up in a human community in order to develop ways of knowing (sense perception, language, reason and emotion)? Or are we born “hard wired” to be able to use them? Is community more important in some ways of knowing than others?
- In what sense is a community of knowers like bees constructing the labyrinths of their hive or a group of builders constructing a building?

Knowers and sources of knowledge

- How is knowledge gained? What are the sources? To what extent might these vary according to age, education or cultural background?
- What role does personal experience play in the formation of knowledge claims?
- To what extent does personal or ideological bias influence our knowledge claims?
- Does knowledge come from inside or outside? Do we construct reality or do we recognize it?
- “Whoever acquires knowledge and does not practise it resembles him who ploughs his land and leaves it unsown.” (Sa’di) Are there responsibilities that necessarily come with knowing something or knowing how to do something? To whom might these responsibilities be owed?
- In what sense, if any, can a machine be said to know something? How can anyone believe that a machine can think?
- When a machine gives an instruction to press a certain button to make it work, where is that knowledge or awareness located? Does technology allow some knowledge to reside outside the human knower? Is knowledge even a “thing” that resides somewhere?

Justification of knowledge claims

- “If the frog tells you that the crocodile is dead, do not doubt it.” What might this Ghanaian proverb suggest about who it is that provides the justification for a knowledge claim? What is the difference between “I am certain” and “It is certain”? Is conviction sufficient for a knowledge claim to be validated? What are the implications of accepting passionate, personal belief as knowledge?
- How are knowledge claims justified? Are the following types of justification all equally reliable: intuition, sense perception, evidence, reasoning, memory, authority, group consensus, and divine revelation?
- Why should time be taken to assess critically the nature of knowledge claims?

Linking questions

- Do knowledge claims transcend different communities or cultures? What differences exist between public and private justifications? To what extent might this distinction between private knowledge and public knowledge be culturally dependent?
- Do the images of a web, building blocks, concentric circles, a spiral, or a grid make a convincing description of the interconnections in the ways of knowing and areas of knowledge? In what ways might these metaphors be useful?
- To what extent is knowledge about the past different in kind from other kinds of knowledge?
- Does making a knowledge claim carry any particular obligation or responsibility for the knower?

Ways of knowing

What this guide calls “ways of knowing” are often so automatic that it is hard to stop the process, as it were, in order to consider them carefully. The senses, through perception, seemingly provide a window on the world as it really is, and the emotions drive us onward without always giving time for reflection. Additionally, the acquisition of a first language occurs so easily for most people, and communication with others is so natural, that the influence of language in shaping thought is not obvious. Finally, a sound argument can be recognized as such without any formal training in logic or other forms of reasoning.

The questions that follow are intended to stimulate and guide reflection about these and related issues. While these four ways of knowing are the focus of this section, this should not be taken to imply either that there are only four ways of knowing, or that everything is known solely through one or other of these four ways (it may be useful to explore what other ways of knowing there might be, and how the various ways interact and overlap).

Sense perception

Do androids dream of electric sheep?

Philip K Dick

We perceive the world through our five senses: sense perception is the active, selective and interpretative process of recording or becoming conscious of the external world. Because sensory perception is an important dimension of our understanding of the world, its function and scope should be examined and critically evaluated. The following questions may help students become aware of the nature and power of sense perception, and how it relates to knowledge acquisition, knowledge claims, and their justification.

Nature of sense perception

- In what ways does the biological constitution of a living organism determine, influence or limit its sense perception? If humans are sensitive only to certain ranges of stimuli, what consequences or limitations might this have for the acquisition of knowledge? How does technology extend, modify, improve or restrict the capabilities of the senses?
- What possibilities for knowledge are opened to us by our senses as they are? What limitations?
- Is the nature of sense perception such that, as Huxley suggests, sensations are essentially private and incommunicable?

By its very nature every embodied spirit is doomed to suffer and enjoy in solitude. Sensations, feelings, insights, fancies—all these are private and, except through symbols and at second hand, incommunicable.

Aldous Huxley (1954)

Importance and limitations of sense perception

- To what extent do our senses give us knowledge of the world as it really is?
- Does the predominance of visual perception constitute a natural characteristic of our human experience or is it one among several ways of being in the world?
- What is the role of culture and language in the perceptual process? Given the partially subjective nature of sense perception, how can different knowers ever agree on what is perceived? Do people with different cultural or linguistic backgrounds live, in some sense, in different worlds?
- How, and to what extent, might expectations, assumptions and beliefs affect sense perceptions? How, if at all, can factors that bias our views of the world be identified? Is all sense perception necessarily theory-laden? Do knowers have a moral duty to examine their own perceptual filters?
- It is often claimed that information and communication technologies are blurring the traditional distinctions between simulation and reality. If this is so, what might be the consequences?

Linking questions

- To what extent is visual perception in particular a justifiable model not only of all sensory perception but of human understanding as well (in English, “I see” often means “I understand”)?
- What is the role of sense perception in the various areas of knowledge, for example, history or ethics? How does it differ across the disciplines? Is it more important in relation to some disciplines than others? Is there any knowledge that is completely independent of sense perception?
- Does sense perception perform fundamentally distinct functions in the arts and the sciences? To what extent does the artist make an advantage out of the subjective nature of sense perception, while the scientist regards it as an obstacle to be overcome?
- What can be meant by the *Panchatantra* saying, “Knowledge is the true organ of sight, not the eyes”? Is it necessary to have clear ideas to see?

Sense perception and areas of knowledge

- What role does observation play in the methods used to pursue knowledge in different disciplines? For example, are the conditions, function and results of observation the same for biology and human science? If not, what accounts for the differences?
- What role does what we expect to see, or are used to seeing, play in what we observe? For example, after learning about the structure of cells from a textbook, how “neutral” might the observation of a slide under the microscope be? Can we learn how to see things properly?

Language

Language exerts hidden power, like a moon on the tides.

Rita Mae Brown

Language is so much a part of human activity that it is easily taken for granted. The issues related to language and knowledge call for conscious scrutiny in order to recognize its influence on thought and behaviour.

Language can be thought of as a symbol system, engaged in representing the world, capturing and communicating thought and experience. Language also can be seen as existing in itself, as something to be played with and transformed and shaped in its own right and something that can transform and shape thought and action.

Nature of language

- What different functions does language perform? Which are most relevant in creating and communicating knowledge?
- What did Aldous Huxley (1947) mean when he observed that “Words form the thread on which we string our experiences”? To what extent is it possible to separate our experience of the world from the narratives we construct of them?
- In what ways does written language differ from spoken language in its relationship to knowledge?
- Is it reasonable to argue for the preservation of established forms of language, for example, as concerns grammar, spelling, syntax, meaning or use? Is one language common to the whole world a defensible project?
- What is the role of language in creating and reinforcing social distinctions, such as class, ethnicity and gender?
- What is the role of language in sustaining relationships of authority? Do people speak the same way to inferiors and superiors in a hierarchy? Does the professional authority speak in the same way as the person seeking opinion or advice? Can control of written language create or reinforce power?
- How does technological change affect the way language is used and the way communication takes place? How might innovations in language, such as Internet chat or text messaging, be assessed: as contributions to or assaults against how language and communication “should be”?
- What may have been meant by the comment “How strangely do we diminish a thing as soon as we try to express it in words” (Maurice Maeterlinck)?

Language and culture

- If people speak more than one language, is what they know different in each language? Does each language provide a different framework for reality?
- How is the meaning of what is said affected by silences and omissions, pace, tone of voice and bodily movement? How might these factors be influenced in turn by the social or cultural context?
- What is lost in translation from one language to another? Why?
- To what degree might different languages shape in their speakers different concepts of themselves and the world? What are the implications of such differences for knowledge?

Language and thought

- How have spoken sounds acquired meaning? What is the connection between the sounds and what they are taken to represent? Given that a word such as “tree” groups together a lot of different individual objects, what is lost in using language to describe the world? What are the advantages?
- Is it possible to think without language? How does language facilitate, extend, direct or limit thinking?

- To what extent does language generalize individual experience, classifying it within the experience of a linguistic group? On the other hand, to what extent do some kinds of personal experience elude expression in language?
- Can language be compared with other human forms of symbolic representation, such as conventionalized gestures, sign language for the deaf, dance, painting, music or mathematics? What might language share with these other forms in the communication of what we know? In what ways might it be considered distinct?
- How do “formal languages”, such as computer-programming languages or mathematics, compare with the conventional written and spoken languages of everyday discourse?

Language and knowledge

- How does the capacity to communicate personal experiences and thoughts through language affect knowledge? To what extent does knowledge actually depend on language: on the transmission of concepts from one person or generation to another, and on exposure of concepts or claims to public scrutiny?
- How does language come to be known? Is the capacity to acquire language innate?
- In most of the statements heard, spoken, read or written, facts are blended with values. How can an examination of language distinguish the subjective and ideological biases as well as values that statements may contain? Why might such an examination be desirable?

Linking questions

- To what extent is it possible to overcome ambiguity and vagueness in language? In what contexts might ambiguity either impede knowledge or contribute to its acquisition? Does the balance between precision and ambiguity alter from one area of knowledge to another?
- What do we gain, and what do we lose, when we name something? Do different areas of knowledge manage differently the balance between particularity and generality?

Language and areas of knowledge

- How do the words we use to describe an idea affect our understanding of the world? For example, is “globalization” a synonym for “westernization”? What is the meaning of the term “anti-globalization”? Does it matter which words we use?
- How does the language used to describe the past (for example, a massacre, an incident, a revolt) change history? Does something similar occur when different terms are used to describe natural phenomena (greenhouse effect, global warming, sustainable development) or human behaviour (refugee, asylum seeker)?
- How important are technical terms in different areas of knowledge? Is their correct use a necessary or sufficient indicator of understanding? The following illustrative examples relate to the Diploma Programme subject groups.
 - Group 1: metaphor, alliteration, onomatopoeia, synecdoche, genre, sonnet, haiku
 - Group 2: preposition, active/passive, pluperfect, genitive, creole, dialect

- Group 3: cost–benefit analysis, price elasticity, evapotranspiration, neo-fascism, push–pull technology, ontology, cognitive dissonance, enculturation
 - Group 4: symbiosis, allotrope, ergonomics, trophic level, entropy
 - Group 5: irrational number, asymptote, dot product, isomorphism, minimum spanning tree
 - Group 6: dynamic content, L cut, sonata, dramaturgy, trompe l’œil
- To what degree might each area of knowledge be seen as having its own language? Its own culture?

Reason

It has been said that man is a rational animal. All my life I have been searching for evidence which could support this.

Bertrand Russell (1950)

Reason is a way of knowing that involves different elements. In a very general sense, reasoning is a collective endeavour by which people construct meaning together by exchanging, modifying and improving their ideas and opinions. When someone makes a claim to know, it is legitimate to ask for reasons and to expect that these will be coherent. Arguments require consistency. Reason is perhaps as present in everyday decision making and problem solving as it is in mathematics, sciences and other areas of knowledge. The requirements of logical validity and rigour serve these various purposes.

In different degrees and in different ways, it is arguable that reason has its place in many, if not all, areas of knowledge as well as in the everyday experience of individuals and the groups to which we belong. It may be worth considering how reason is used in these different domains to discover and create, to articulate, to justify and assess knowledge claims. For when disputes arise, what is at issue is not only the substance or facts of the matter, but also the appropriateness of the reasons given for acceptance of the facts, and the validity of the logical procedures used in reaching the conclusion.

The questions in this section probe the nature, value and limits of reason, and the logic that many suppose is a shared standard of evaluation.

Nature of reason

- One of the roles traditionally attributed to reason is to find balance or equilibrium between two extremes. Is this idea still relevant as a description of the role that reason plays in the search for self-knowledge? What does it mean for someone to be reasonable?
- What is the difference between reasoning about means and reasoning about ends? Is one more prevalent or more valuable than the other?
- What is the role of reason in the creation and recognition of patterns in nature and in social life?
- Is reason purely objective and universal, or does it vary across cultures? Is logic purely objective and universal?
- Formal logic is the study of form in argument, irrespective of the subject matter. Is it really possible to study the logic of an issue independent of its content, and how beneficial is it to do so? Does the answer to this question depend upon the subject matter under consideration? Does it depend on the area of knowledge to which the subject matter belongs?

- What is the relationship between reason as a way of knowing and logic in its different forms (inductive, deductive, intuitive, natural)? Is it possible and worthwhile to “translate” everyday arguments into formal logical structure, and what might be lost in the translation? How does the commonsense use of “it’s logical”, meaning “it makes sense to me”, differ from its technical meaning of “it has a valid argument form”?

Reason and knowledge

- What possibilities for knowledge are created by reason? What are the advantages of being able to reason about something rather than, say, feeling something, dreaming about something, wishing something to be the case?
- Does all knowledge require some kind of rational basis?
- If knowledge claims cannot be rationally defended, should they be renounced? Is the answer to this question dependent on the area of knowledge of the claim?
- Can reason on its own, independent of sense perception, emotion and language, ever give us knowledge? Or are reason and language inseparable in the quest for, construction and justification of knowledge?
- What constitutes a good argument? What is the value of learning to distinguish between valid and invalid arguments?

Strengths and weaknesses of reason

- What are the advantages of discriminating between valid and invalid arguments, good and bad reasons, more or less persuasive reasoning, both for the individual knower and for society?
- Why are informal fallacies often plausible and convincing? When, where and by whom are they formulated? Are there circumstances under which the use of informal fallacies can be justified, for example, in public advertising campaigns aimed at persuading us to donate money for good causes (for example, humanitarian relief, children’s funds)?
- How can beliefs affect our capacity to reason well and to recognize valid arguments? Can they affect a person’s capacity to distinguish between fallacy, good argument and rationalization? What is the difference between a rational argument and a rationalization?
- What, if any, are the advantages of expressing arguments in symbolic terms? Are the ambiguity and vagueness of conventional language eliminated by this formulation?
- Are there some parts of human life or experience where reason has no real function?

Linking questions

- To what extent do you agree with André Gide’s view that, “L’illogisme irrite. Trop de logique ennue. La vie échappe à la logique, et tout ce que la seule logique construit reste artificiel et contraint. *Donc* est un mot que doit ignorer le poète, et qui n'existe que dans l'esprit.” [Lack of logic annoys. Too much logic is boring. Life escapes logic, and everything built on logic alone is artificial and limited. *Therefore* is a word that the poet must ignore, that exists only in the mind.].?
- Susan Sontag said that, “Thinking is a form of feeling...feeling is a form of thinking.” Are they related in this way?

- How does the role of reason compare with the roles of the other ways of knowing? Why might some people think that reason is superior, and what consequences does holding this position have for the knowledge pursued and the methods considered appropriate in the pursuit?
- Does the role of reason affect the degree of certainty in, or the social status of, the various areas of knowledge? What are the implications of the answer to this question when disputes arise among practitioners and between cultures?
- Attempts have been made to identify universal, self-evident and incontrovertible laws of logic, such as the law of identity (for example, “an apple is an apple”) or the law of non-contradiction (for example, “nothing can be an apple and also a non-apple”). Are these actually laws in the scientific sense of the term, or are they axioms? How do logical axioms compare with axioms in mathematics, and with the underlying beliefs we take for granted in other areas of knowledge? What is the role of reason in ethical principles and their justification? Is reason more important to acting morally than other ways of knowing?

Emotion

[Emotion] has the advantage of being open to all, the weak and the lowly, the illiterate and the scholar. It is seen to be as efficacious as any other method and is sometimes said to be stronger than the others, since it is its own fruition, while other methods are means to some other ends.

Bhagavad Gita

Emotions play a powerful role in shaping thoughts, influencing behaviour, and steering the pursuit of knowledge. While emotions may be a key to self-understanding and to understanding the world, the extent to which they contribute to both can be explored through a discussion of questions like those that follow, probing the nature, value, and limits of emotion as a way of knowing.

Nature of emotion

- Can we ever know anything purely through emotions? How do emotions interact with reason, sense perception and language?
- To what degree is emotion biological or “hard-wired”, and hence universal to all human beings? To what extent is it shaped by culture and hence displayed differently in different societies?
- What sorts of things count as emotions? Are emotions and feelings the same thing?
- Can feelings have a rational basis? Is “emotional intelligence” an oxymoron? Robert Solomon says that emotions are “systems of judgments”, and that “virtually all of our experience is to some degree ‘affective’, and even our most dispassionate judgments...can be adequately understood only within some larger emotional context”. Is he correct in claiming that virtually all sense perception, and reasoning, must involve emotion?
- Is it possible to experience an emotion, a feeling, an attitude or sensibility that cannot be expressed in language? Can an emotion, such as love or grief, have its origins in, or be shaped by, language?
- Can emotions be trained? To what extent can we control our emotions, not in terms of how we act on them, but what we actually feel? Do cultures select emotions to foster and use?

- Are concepts such as solidarity, patriotism and racism examples of collective emotions?
- Is faith an emotion, a feeling, or neither?

Emotion and knowledge

- Does emotion reside in the realm of private knowledge in the sense that it cannot be verified by others? Can people be mistaken about their own emotions? Can others lead them to recognize previously unknown emotions?
- Is there any kind of knowledge that can be attained solely through emotion? Is the answer to the question dependent on factors such as gender, age, culture, and/or socio-economic group?
- Is emotion an essential ingredient of the pursuit or validation of scientific or artistic knowledge? Can there be creativity without emotion?
- Why has emotion sometimes been seen as a less valuable way of knowing than, say, reason? Or does the value of emotion as a way of knowing depend on the kind of knowledge that is being pursued?
- Susan Stebbing says, "I do not in the least wish to suggest that it is undesirable for us to be set on thinking by emotional considerations. On the contrary, nothing else will suffice to make us think to some purpose." David Hume claims that, "Reason is, and ought only to be, the slave of the passions." Is it true that emotions are an essential driver of any purposeful activity?

Linking questions

- What part does emotion play in the acquisition of knowledge? Does the role of emotion vary across the different areas of knowledge?
- Should emotion play a role in the evaluation of knowledge claims? Are there circumstances under which, in order to evaluate a knowledge claim, one should ignore or, alternatively, pay special attention to one's emotions?
- Is an action morally justifiable if it feels right? What part do, or should, emotions play in the formation of moral judgments or political judgments?
- Can emotions be classified as good or bad? Can there be correct, or appropriate, emotional responses? Is it correct to be horrified by accounts of torture?
- Is faith purely emotional or is it possible to provide a rational justification for religious belief? Is emotion a source of spiritual knowledge?
- Do people act their way into feeling or feel their way into action? What is the relationship between emotion and experience (for example, in CAS activities)?
- How did your feelings or emotions affect (positively or negatively) your ability to perform, to make decisions or to reason in regard to particular CAS activities? How did you deal with such situations?

Areas of knowledge

The areas of knowledge, which are situated within the perimeter of the TOK diagram (figure 1), are subject areas or disciplines into which knowledge is frequently classified. They may be seen as an application of ways of knowing, perhaps shaped by methodology, to particular subject matter. The questions that follow in this section deal with both the rationale for such classification and the interdisciplinary comparisons that clarify or challenge the division of knowledge into areas. Reference to the following linking questions may also be useful.

The students' own experience as knowers would ideally base many of the questions on their studies in the Diploma Programme. Teachers may find it necessary to supplement the students' educational experience with additional concepts, but they should be guided always by the aim of stimulating students' personal reflection on knowledge. The question "How do I know?", which is implied in the "Ways of knowing" section, interacts in this section with another question, "What do I know?", or, more specifically, "How do I know that a given assertion is true, or a given judgment is well grounded?"

Mathematics

Mathematics may be defined as the subject in which we never know what we are talking about, nor whether what we are saying is true.

Bertrand Russell (1917)

From a TOK point of view mathematics is a rather special area of knowledge. On the one hand it seems to supply a certainty often missing in other disciplines. On the other, its methods—for example, the application of strict logical procedures to supposedly self-evident first principles—suggest a subject matter that is removed from the real world. It is hardly surprising then to find a variety of responses to mathematical knowledge, from astonishment at the beauty of some mathematical argument, to wonder at the power of mathematics to solve problems in the sciences or engineering, to frustration in the face of apparently meaningless symbols manipulated as part of a pointless game.

What is unarguable is the ability of mathematics to yield important knowledge about the world, often in conjunction with other areas of knowledge. Why mathematics should be so successful in this regard rests upon a number of questions concerning the nature of mathematics itself and its relation to the world and to human intelligence. Some mathematicians argue that their subject is a language, that it is, in some sense, universal or that there is great beauty to be found in it. What is clear, in any case, is that mathematics is a rich area of exploration for the TOK student.

Nature of mathematics

- Why is it that some mathematicians and students of mathematics feel that mathematics is in some sense "already there" to be discovered?
- What does it mean to say that mathematics can be regarded as a formal game devoid of intrinsic meaning? If this is the case, how can there be such a wealth of applications in the real world?
- What does it mean to say that mathematics is an axiomatic system?

- Some educational systems make a distinction between pure mathematics and applied mathematics. Does this reflect a fundamental difference in approach to mathematical knowledge?
- It is sometimes said that mathematical reasoning is a process of logical deduction. If this is true, and if the conclusion of a proof must always be implied by (contained in) its premises, how can there ever be new mathematical knowledge?

Mathematics and the world

- We can use mathematics successfully to model real-world processes. Is this because we create mathematics to mirror the world or because the world is intrinsically mathematical?
- Some major advances in physics, for example, discoveries of elementary particles, have come about through arguments involving the beauty, elegance or symmetry of the underlying mathematics. What does this tell us about the relationship between the natural sciences, mathematics and the natural world?
- Is mathematics better defined by its method or by its subject matter?
- In the light of the questions above, is mathematics invented or discovered?
- Mathematicians marvel at some of the deep connections between disparate parts of their subject. Is this evidence for a simple underlying mathematical reality?

Mathematics and knowledge claims

- What do mathematicians mean by mathematical proof, and how does it differ from good reasons in other areas of knowledge?
- What are the roles of empirical evidence and inductive reasoning in establishing a mathematical claim?
- Are all mathematical statements either true or false?
- Can a mathematical statement be true before it has been proven?
- In hypothesis testing, a statistician could state that a result was true at the 5% significance level. What does this mean?
- It has been argued that we come to know the number 3 through examples such as three oranges or three cups. Does this support the independent existence of the number 3 and, by extension, numbers in general? If so, what of numbers such as 0, -1, i (the square root of -1) and a trillion? If not, in what sense do numbers exist?
- In the light of the question above, why might it be said that mathematics makes true claims about non-existent objects?
- In what sense might chaos (non-linear dynamical systems) theory suggest a limit to the applicability of mathematics to the real world?

Mathematics and the knower

- Can mathematics be characterized as a universal language?
- To what extent is mathematics a product of human social interaction?

- What is the role of the mathematical community in determining the validity of a mathematical proof?
- Why is it that mathematics is considered to be of different value in different cultures?
- How would you account for the following features that seem to belong particularly to mathematics: some people learn it very easily and outperform their peers by years; some people find it almost impossible to learn, however hard they try; most outstanding mathematicians supposedly achieve their best work before they reach the age of 30?
- What counts as understanding in mathematics? Is it sufficient to get the right answer to a mathematical problem to say that one understands the relevant mathematics?
- Are there aspects of mathematics that one can choose whether or not to believe?
- How do we choose the axioms underlying mathematics? Is this an act of faith?
- Do the terms “beauty” or “elegance” have a role in mathematical thought?
- Is there a correlation between mathematical ability and intelligence?
- Is there a clear-cut distinction between being good or bad at mathematics?
- How have technological innovations, such as developments in computing, affected the nature and practice of mathematics?

Natural sciences

The natural sciences reflect a concerted effort on the part of humans to search for understanding of the world. Like any other human endeavour, the development of scientific knowledge forms a web with more practical, even everyday, interests and concerns. The natural sciences are recognized as a model for knowledge owing to many factors, prime among which is their capacity to explain and make precise predictions.

The influence of the natural sciences permeates much of modern life, for example, in the widespread and growing use of technologies. This prominence has led to a wide variety of attitudes towards the nature, scope and value of the natural sciences. Discussion of questions like the ones that follow about scientific methodologies, and the context in which kinds of scientific work take place, raises many knowledge issues.

Nature of the sciences

- Which subjects does the term “natural sciences” include or exclude? Are there any grey areas? Do these areas change from one era to another, from one culture or tradition to another?
- Should the natural sciences be regarded more as a method or more as a system of knowledge? How does this relate to what Poincaré meant when he said “Science is built of facts the way a house is built of bricks: but an accumulation of facts is no more science than a pile of bricks is a house”? To what extent do the answers to these questions vary among the natural sciences?
- Do the natural sciences make any assumptions that are unprovable by science (for example, that everything that happens is caused, that all causes are physical)? If so, what does this imply about natural sciences as an area of knowledge?

Natural sciences: Methods of gaining knowledge

- What is meant by the “scientific method”? Is there a single scientific method, used in all the natural sciences and distinct from the methods of the other areas of knowledge? To what extent does the scientific method vary in different cultures and eras?
- To what extent do methods vary within the natural sciences? What effects might such variation have? For example, have you experienced methodological disputes or confusions in your own work in experimental science? What are the roles of various kinds of reasoning in science?
- To what extent do scientists rely on either confirming or falsifying a hypothesis? Is either matter ever straightforward? What does this tell us about the nature of the scientific endeavour?
- What are the implications of the following claim for the aspirations of natural sciences in particular and for knowledge in general?

One aim of the physical sciences has been to give an exact picture of the material world. One achievement of physics in the twentieth century has been to prove that this aim is unattainable.

Jacob Bronowski

- In the Diploma Programme, group 4 subjects are designated “experimental sciences”. What counts as an experiment? Can experiments be undertaken in other subjects? Are there some necessary conditions for an activity to be an experiment, for example, hypotheses, data, manipulation of variables, observations, generalizations and expectations of outcomes?
- What are the similarities and differences in methods used in the natural sciences in comparison with those used in the human sciences? To what extent do their fields of study overlap? To what extent would it be true to say that the human sciences appear less scientific because their subject matter is more complex? What difference does it make if instead of studying atoms or plants we are studying creatures who can think and act?
- What is the role of imagination and creativity in the sciences? To what extent might the formulation of a hypothesis or the invention of a research method be comparable to imagining and creating a work of art?
- What knowledge, if any, will always remain beyond the capabilities of science to investigate or verify? If there is, or can be, such knowledge, why will it always elude effective scientific treatment?

Natural sciences and knowledge claims

- What kinds of explanations do scientists offer, and how do these explanations compare with those offered in other areas of knowledge? What are the differences between theories and myths as forms of explanation?
- To what extent can all the natural sciences be understood through the study of just one science, for example, physics? If biology relies on chemistry, and chemistry relies on physics, can it be said that all natural sciences are reducible to physics? If so, what would be the implications of this position?
- Is scientific knowledge progressive? Has scientific knowledge always grown? In this respect, how do the natural sciences compare with other areas of knowledge, for example, history, the human sciences, ethics and the arts? Could there ever be an “end” to science? In other words, could we reach a point where everything important in a scientific sense is known? If so, what might be the consequences of this?

- Is it accurate to say that much of science investigates entities and concepts beyond everyday experience of the world, such as the nature and behaviour of electromagnetic fields, subatomic particles, or the space–time continuum? Do the entities in scientists’ explanatory models and theories (for example, Higgs bosons, selfish genes) actually exist, or are they primarily useful inventions for predicting and controlling the natural world? What consequences might questions about the reality of these entities have for the public perception and understanding of science? But if they are only fictions how is it that they can yield such accurate predictions in many cases?
- How different are the knowledge claims of those disciplines that are primarily historical, such as evolutionary biology, cosmology, geology and paleontology, from those that are primarily experimental, such as physics and chemistry?

Natural sciences and values

- How does the social context of scientific work affect the methods and findings of science?
- Is science, or ought it to be, value-free? What implications does your answer have for the regulation of science? For example: Who should decide whether particular directions in research are pursued? Who should determine priorities in the funding of research?
- Should scientists be held morally responsible for the applications of their discoveries? Is there any area of scientific knowledge the pursuit of which is morally unacceptable or morally required?
- It has been argued that certain discoveries (such as quantum mechanics, chaos theory, Heisenberg’s uncertainty principle, Einstein’s theory of relativity, Darwin’s theory of evolution) have had major implications for knowledge outside their immediate field. Why is it that science has the power to inform thinking in other areas of knowledge such as philosophy and religion? To what extent should philosophy and religion take careful note of scientific developments?

Natural sciences and technology

- Is scientific knowledge valued more for its own sake or for the technology that it makes possible? Is there any science that can be pursued without the use of technology?
- There are some scientific fields that depend entirely upon technology for their existence, for example, spectroscopy, radio or X-ray astronomy. What are the knowledge implications of this? Could there be problems of knowledge that are unknown now, because the technology needed to reveal them does not exist yet?

Natural sciences: Metaphor and reality

- If natural sciences are defined as investigating the natural world, what is meant by “natural” or “nature” in this context? What difference might it make to scientific work if nature were to be regarded as a machine (for example, as a clockwork mechanism) or as an organism (such as in some interpretations of the Gaia hypothesis)? How useful are these metaphors?
- Does scientific language and vocabulary have primarily a descriptive or an interpretative function? Consider here expressions such as “artificial intelligence”, “electric current”, “natural selection” and “concentration gradient”.

Human sciences

It is the great destiny of human science not to ease man's labour or to prolong his life, noble as these ends may be, nor to serve the ends of power, but to enable man to walk upright without fear in a world he at length will understand and which is his home.

Paul B Sears

It is often said that human behaviour is unpredictable, and that this is what makes it impossible to study humans scientifically. But our everyday interactions depend on the fact that we do, most of the time, think we know how other people will respond to what we say or do. Does the fact that we are sometimes wrong mean that prediction of human behaviour is impossible?

Can human behaviour be studied scientifically? What differences and similarities are there between the human sciences and the natural sciences, in terms of both their methods and procedures for gaining knowledge and the nature of the knowledge produced?

In order to understand conscious behaviour do we have to examine motives, or the meaning of an action for the people involved?

Research in the human sciences often has a relationship to practical matters and concerns. Market research typically aims to increase profits; research in economics may seek to influence public policy. Does such a relationship between research and its context affect its status as science?

Nature of the human sciences

- What kinds of knowledge are usually included in the category of human science? How do we decide whether a particular area of study is a human science? What are the similarities and differences between the subject matter and methodologies of the various human sciences?
- To what extent does the human subject matter of this area of knowledge affect a scientific approach? Is it reasonable to think that human behaviour can be studied scientifically?
- "Under the most rigorously controlled conditions of pressure, temperature, humidity, and other variables, the organism will do exactly as it pleases" (Anon). In what ways and to what extent are the objects of study in the natural and the human sciences similar or different?

Human sciences: Methods of gaining knowledge

- Are the human sciences, as a whole, fundamentally different from the natural sciences? Or are there sometimes surprising similarities between the two areas in, for example, the ways they use models and theories, their methods for collecting data, the nature of facts, the role of observation and experimentation, the impact of the observer on the observed phenomena, quantification, falsifiability, precise prediction, identification of constants, and the degree of complexity of the phenomena studied?
- It is not uncommon for very different approaches to coexist within a single human science (for example, classical versus Keynesian versus Marxist economics, or psychodynamic versus behaviourist versus humanistic approaches in psychology). If two competing paradigms give different explanations of a phenomenon, how can we decide which is correct?

- The human sciences are sometimes conceived as aiming not only to explain human behaviour or action (“from the outside”) but also to understand it (“from the inside”). From this perspective, can the human sciences be said to have a richness that the natural sciences lack, in terms of ways of knowing and access to different forms of justification?
- In what ways does language play a similar or different role in the human sciences and the natural sciences? In what senses can empathy, intuition and feeling be considered legitimate or especially powerful ways of knowing in the human sciences? Are there circumstances under which this might not be the case?
- How might the language used in polls, questionnaires and other information-gathering devices of this sort influence the conclusions reached? If there is an influence, does it, or a similar one, occur in natural science research? Does the extent of the influence relate to the degree of certainty attributed to the natural sciences and the human sciences respectively, or to the social status or value associated with each?
- What are the main difficulties human scientists confront when trying to provide explanations of human behaviour? What methods have been invented to circumvent these difficulties and to minimize their influence on the results that are obtained?
- Both the human sciences and certain forms of art, such as poetry and literature, seek knowledge about humans. In what ways are these types of knowledge similar or different? Is Geertz’s search for meaning similar to the poet’s or novelist’s?

Believing, with Max Weber, that man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be, therefore, not an experimental science in search of laws but an interpretive one in search of meaning.

Clifford Geertz

Human sciences and knowledge claims

- How does the use of numbers, statistics, graphs and other quantitative instruments affect the way knowledge claims in the human sciences are valued?
- Is it reasonable to attempt to explain human behaviour independently of what people claim are their intentions? Are there insights into behaviour that can only be afforded by finding these out?
- What kinds of explanations do human sciences offer, and how do these explanations compare with those in other areas of knowledge? To what extent do the human sciences offer any of the following: scientific laws, recognition of general patterns and tendencies, prediction of the future? To what extent do they offer insight or understanding?

Human sciences and values

- Can human behaviour be usefully classified and categorized? Can it be classified within a culture? Across cultures? Can patterns of behaviour be identified as human behaviour? Within a culture? Across cultures? What beliefs or prejudices might be involved in our answers to these questions?
- In what ways might the beliefs and interests of human scientists influence their conclusions? Do the same considerations apply in other areas of knowledge such as the natural sciences or mathematics?
- In what ways might social, political, cultural and religious factors affect the types of human science research that are financed and undertaken, or rejected?

- Is research in the human sciences a viable route to learn about and, in the long run, transform or improve public policy or the common good? Or is human science research intrinsically valuable for the sake of the knowledge that can be gained? Might it rather have a utilitarian or even covert purpose behind it? How, if at all, can we determine when it is which, and if one or another of these purposes predominates?

History

History is more or less bunk. It's tradition. We don't want tradition. We want to live in the present and the only history that is worth a tinker's damn is the history we made today.

Henry Ford

Those who cannot remember the past are condemned to repeat it.

George Santayana

Although history is sometimes considered a human science, it is treated separately because, unlike all the other human sciences, or indeed other sciences in general, knowers cannot directly observe the past. This characteristic of history opens up many questions of knowledge that are unique to it.

History reflects an attempt on the part of individuals and communities to understand the temporal nature of human life. "Remembering the past" is never straightforward.

Historiography, that is, a study of the writings of history, is not a study of every event that has occurred, but rather a study of those traces that have been deemed relevant and meaningful by historians. The availability of those traces, and their relevance and meaning, may be influenced in many ways, by factors such as ideology, perspective or purpose. As knowers seek to clarify the past, and to determine whether or not what is claimed is true, they will face problems of reliability and attitudes, and may consider the purpose of historical analysis and the issue of the nature of historical truth. The opportunities for distinctions and interpretations that are culturally driven abound, and invite analysis.

Nature of history

- What is history? Is it the study of the past, or the study of records of the past?
- To what extent is the very nature of this area of knowledge affected by being about the past? In what ways do other areas of knowledge also concern themselves with the past? Is all knowledge, in a sense, historical knowledge?
- Which of the following is the most persuasive description of history: an account of great individuals, an account of great historical forces, an account of a decline from the greatness of the past, an account of progress towards the future, or a cycle of recurring events? What other descriptions might be appropriate?
- What is the significance of Carlyle's view that "The history of the world is but the biography of great men"?
- What do you understand by George Orwell's comment that "Who controls the past controls the future. Who controls the present controls the past"? To what extent do you agree with it, and its implications?

History: Methods of gaining knowledge

- Can one talk meaningfully of a historical fact? How far can we speak with certainty about anything in the past?
- In what ways has technology affected the study of history? How have the methods of gaining evidence and the means of communicating historical interpretation, for example, been affected by technological development? Can we now observe the past more directly?
- What are the implications for historical knowledge of the following claim?

It is impossible to write ancient history because we lack source materials, and impossible to write modern history because we have far too many.

Charles Péguy

- Which is the more important attribute of the historian, the ability to analyse evidence scientifically (and so secure the foundations of an argument), or the ability to expand it with creative imagination (and create a living account)?
- What is the role of the historian? Does the historian record history, or create it? Can the historian be free of bias in the selection and interpretation of material? Could it be reasonably argued that the personal understanding of historians, despite or even because of their possible bias, is necessary or even desirable in the interpretation and recording of history? Is the power of persuasion a characteristic of a good historian?
- How does the context within which historians live affect historical knowledge? To what extent might the position of historians within their own epoch and culture undermine the value of their interpretation, and to what extent might it increase its value in making it relevant to a contemporary audience?
- What is a historical explanation? How are causal connections between events established in history? According to what criteria can such explanations be critically evaluated?

History and knowledge claims

- Why study history? Is it possible to know who we are without a knowledge of the past? Is there any other way of describing and assessing the process of change in human societies?
- Can history provide a guide to understanding contemporary affairs? Can it provide a guide to the future? What might be “the lessons of history” for future generations?
- If truth is difficult to prove in history, does it follow that all versions are equally acceptable?
- What knowledge of history might be gained by focusing attention on each of the following: the historian, the historical documents and written history, the readership, and the social, cultural and historical context?

History and values

- About whom is history written? Are the lives of some groups of people more historically significant than the lives of others? Why do selected past events appear in books as historically important while others are ignored? To what extent is history dependent on who kept or preserved a written record? To what extent is history about those who held power, and to what extent is it about ordinary people?
- Are value judgments a fault in the writing of history? Should value-laden terms, such as atrocity, regime, hero or freedom, always be avoided, or does exclusion of value judgments deprive history of meaning?
- To what extent can distinctions be made between factual report, biased interpretation and calculated distortion? Can history be used for propaganda? If so, how?

The arts

El arte es una mentira que nos acerca a la verdad.
[Art is a lie that brings us nearer to the truth.]

Pablo Picasso

“The arts” is a very broad field. It is hard to say clearly what it includes; it is even harder to characterize it simply. As used here, the term certainly includes literature, from group 1 of the Diploma Programme, and the various forms in group 6: dance, film, music, theatre and visual arts. The differences between the forms may be at least as interesting as their similarities. For example, how much is there in common between knowing a poem and knowing a dance? Is it entirely clear what “knowing” means in either case?

With one exception, none of the following questions mentions specific works of art. Most of them, however, need relevant cases, or examples, to “come alive”.

Nature of the arts

- Does art have to have meaning? Conversely, if something is meaningless, can it be art?
- Is a work of art enlarged or diminished by interpretation? What makes something a good or bad interpretation?
- Can anything be art (for example, Duchamp’s *Fountain*, Cage’s *4’33”*)? Are there limits to what is acceptable in art (for example, Kirkup’s *The love that dares to speak its name*, Hirst’s *Mother and Child Divided*)? Who decides?
- Some languages, such as Balinese, have no generic word for “the arts”. To what extent might the concept be a culturally relative one? To what extent, even within those languages that have a generic term, is the term “the arts” elastic in definition?
- Do all the arts share certain common features? What might these be? Is there a distinction between arts and applied arts (crafts)?
- What roles do the arts play in people’s lives? Are these roles unique to the arts? (Can art change the way we interpret the world? Does involvement in the arts help the development of personal value systems? Can art express emotion? Does art enlarge what it is possible to think?)
- Are the arts a kind of knowledge, or are they a means of expressing knowledge? If the latter, what knowledge might they express?

- How important is form in art?

C'est joli la vie, mais cela n'a pas de forme. L'art a pour objet de lui en donner une...

[Life is very nice but it lacks form. It's the aim of art to give it some.]

Jean Anouilh

- What is the origin and nature of a sense of beauty? Is this sense specific to the individual or to the culture, or is it universal?

The arts: Methods of gaining knowledge

- What is the proper function of the arts: to capture a perception of reality, to teach or uplift the mind, to express emotion, to create beauty, to bind a community together or to praise a spiritual power? Are there functions omitted here? Do the various arts have the same functions?
- To what extent and in what ways might the arts be regarded as a representation of reality? What kinds of art might be seen as "realistic"?
- Is originality essential in the arts? Is the relationship between the individual artist and tradition similar in all the arts, in all cultures and across all times?
- Most arts have used technology, over many centuries (for example, musical instruments, pencils). Has the relationship between the arts and technology changed as a result of the possibilities of mechanical reproduction and digital manipulation?

The arts and knowledge claims

- Does familiarity with art itself provide knowledge and, if so, of what kind? Knowledge of facts? Of the creator of the art form? Of the conventions of the form or tradition? Of psychology or cultural history? Of oneself?
- Does art, or can art, tell the truth? If so, is artistic truth the same as truth in the context of the natural sciences, the human sciences, or history? How might the knowledge claims of art be verified or falsified?
- In science the idea of progress is dominant: new knowledge builds on what is already known; knowledge once discovered cannot be "unlearned". Is the same true in the arts?
- What do artists do to exercise "critical control" over the imagination, in Popper's phrase?

Far from being engaged in opposing or incompatible activities, scientists and artists are both trying to extend our understanding of experience by the use of creative imagination subjected to critical control, and so both are using irrational as well as rational faculties. Both are explaining the unknown and trying to articulate the search and its findings. Both are seekers after truth who make indispensable use of intuition.

Karl Popper

- Is explanation a goal of the arts? How do the arts compare in this regard with other areas of knowledge?
- What did Frank Zappa mean when he claimed that "Talking about music is like dancing about architecture"?

The arts and values

- What is the value of learning an art form (for example, Diploma Programme music or visual arts)? What is of value in each of the different art forms (dance, film, literature, music, theatre, visual arts, and so on)? Are any of the arts of more or less value than the others? Can what is of value in arts education be learned in other ways? How are value judgments in the arts justified? How is “good art” recognized or decided on?
- What are the justifications and implications of claiming that there are absolute standards for good art, or that the only standard for good art is individual taste?
- Does the artist carry any moral or ethical responsibility? Is it possible for an artwork to be immoral? Should art be judged on its ability to please or shock?
- What is the role of education in creating art, and in appreciating it? Is an art form legitimate if it can be enjoyed only by those trained in its appreciation through having had relevant education or through having become familiar with it in their own cultural context? (Would your answer be the same if the question was about the legitimacy of, for example, quantum physics?) Is a critical assessment of an art form legitimate if it is made by someone with no relevant education or cultural familiarity?
- If art has power to change how people think, does this mean it should be controlled? Should art be politically subversive? Or should it serve the interests of the community, or the state, or the patron or funding organization?

The arts and knowledge perspectives

- What knowledge of art can be gained by focusing attention on the **artist**? Can or should artists’ intentions, and the creative process itself, be understood through observing artists or knowing something of their lives? Is the creative process as important as the final product, even though it cannot be observed directly? Are an artist’s intentions relevant to assessing the work? Can a work of art contain or convey meaning of which the artist is oblivious?
- What knowledge of art can be gained by focusing attention solely on the **work** itself, in isolation from the artist or the social context? Can or should technical virtuosity in itself, a skilled mastery of the medium, be enough to distinguish a work of art? Are certain compositions, ways of structuring sounds or shapes, inherently more pleasing than others? Can a work be judged primarily by the harmony of form and content, the way in which structure and style work effectively to create or support the subject matter?
- What knowledge of art can be gained by focusing on the reader or audience’s **response**? Can it be plausibly argued that art is brought into being only in the response of the audience, that a work is created anew each time it is viewed, heard or read? What is the role of the critic in judgment of the worth of art? Are any of the following sufficient indicators of the value of a work: its popularity, its commercial value in the market, its universality in its appeal beyond its cultural boundaries, and/or its longevity?
- What knowledge of art can be gained by focusing attention on its social, cultural or historical **context**? To what extent do power relationships determine what art or whose art is valued? Is all art essentially a product of a particular place and time in terms of its subject matter and conventions of expression? Is art best seen as anthropological or historical documentation, bringing to life a remote society or era, but understood esoterically, only with independent knowledge of that remote life? Does art become obsolete? Is art understood more fully by emphasizing what all cultures have in common rather than by stressing what is unique to each?

Ethics

To avoid any evil, to seek the good, to keep the mind pure: this is the essence of the Buddha's teaching.

Buddha, *The Way of Practice*

Few areas of the TOK course are concerned with such immediate and personal matters as ethics. Ethics involves a discussion of the way we ought to live our lives, the distinctions between right and wrong, the justification of moral judgments, and the implications of moral actions for the individual and the group. In TOK, the major emphasis is on how we can know or justify what we ought to do. In this sense, an exploration of ethical questions from the point of view of TOK focuses on knowledge issues woven and implied in them, rather than exclusively on the questions themselves.

Nature of ethics

- Is there any real distinction between “morality” and “ethics”? Is ethics concerned primarily with what **is** or what **ought to be**?
- In what ways might a moral judgment differ from other judgments?
- Are ethical differences between people the result of holding different sets of values?
- Does morality necessarily involve action, or can it involve thoughts and attitudes alone?
- How does living a moral life matter?
- In what ways might justifications for moral beliefs be influenced by assumptions about human nature—whether humans are by nature good, evil, or amoral?
- “If you travel with fraud you reach your destination, but are unable to return” (Ghanaian proverb). What are the assumptions underlying this quote? How possible is it to undo the bad we do?
- “He who wears his morality but as his best garment were better naked” (Kahlil Gibran). What are the assumptions underlying this quote? Is it necessary to be sincere, if your actions are to be moral?
- In an ethical discussion, must the participants accept rules that go beyond their own particular theoretical frame or position? What can be the implications of answering yes or no to this question?
- Why and how does knowledge matter in ethical conflicts?

Ethics: Methods of gaining knowledge and knowledge claims

- What is the source of the sense of right and wrong? For moral beliefs, can one distinguish between the source and the justification, or are the two the same?
- What are the justifications for, and implications of, claiming that there are universal standards for morality, or that there are societal standards of morality, or that there are only individual standards of morality? Are the three positions mutually exclusive?
- If moral claims are in conflict, does it follow that there is no such justifiable concept as right or wrong?
- Does ambiguity in ethics make it “weak knowledge”?
- Is there a sharp distinction between ethics, etiquette and matters of taste?

Ethics and knowledge perspectives

- To what extent does the state of a person's knowledge play a part in deciding whether an act is right or wrong? Under what conditions would it be legitimate for a person to plead ignorance? Are people responsible for finding out as much relevant information as possible?
- What knowledge of morality may be gained by focusing attention on the **individual** making moral judgments? Is freedom of choice a necessary condition for making moral judgments? Should the person's intentions be the criterion for deciding whether an action is right or wrong? Are people always aware of their real intentions or motives?
- What knowledge of morality may be gained by focusing attention on the features of the **moral judgment** or **act** itself? Are some thoughts or actions intrinsically right or wrong, independent of circumstances? Is it possible to establish firm principles to determine moral action? If so, on what basis? On the basis of reason? Divine revelation? Is it possible to rank principles in order of importance? What are "human rights" and on what basis do they rest?
- What knowledge of morality may be gained by focusing attention on the **consequences** of the thoughts or actions? Which matters more, the consequences for individuals or the consequences for the group? Can consequences be quantified or weighed scientifically?
- What knowledge of morality may be gained by focusing attention on the social, cultural or historical **context** of the moral judgment? Is a shared moral code a necessity for a harmonious society? To what extent can acceptance of dissent be a feature of a shared moral code? To what extent do moral values differ, depending on the society or the historical time? For example, can a practice such as slavery be right in one era or region and wrong in another? Can the practices of one society be judged with any validity by applying the values of another generation or another culture? Do some values seem to be universal, or nearly so?
- How may moral dilemmas arise? Is it possible for an individual to act in a morally justifiable way within a context of restricted choice, oppression, or corruption? To what extent may the circumstances of people's lives excuse actions that might be condemned by society's moral principles? Can respect for a culture, in harmony with principles of tolerance and openness, be reconciled with a condemnation of specific practices within that culture, on the basis of other principles?
- When confronted by an unjust situation, is a person obliged to act? If the unjust situation is in the context of friendship or family, does this make a difference? Should this make a difference? Are there ethical constraints on the actions that a person should take to "right a wrong"?

Ethics and politics

- How important are values ("principles", "ideals") in politics? Is politics primarily concerned with what **is** or what **ought to be**? Is it better for society if politicians are skilled in the workings of power, or if they have strong principles that govern their actions?
- Are the following ideas political, ethical, or both: justice, rights, social responsibility, equality and freedom? Is the concept of property an ethical idea? Is the concept of society an ethical idea?
- To what extent are political systems such as autocracy, democracy, theocracy, capitalism and communism, in their ideal forms, allied with ethical ideas of the right way for people to live in a society? To what extent might each system embody different concepts of justice and social responsibility?
- Does politics affect the ethics of a society?

- Is there an obligation on an individual to be politically aware, or even politically active? Conversely, is there an obligation on an individual to refrain from political action? Can one avoid being affected by politics?
- How should the language of political debate be analysed and judged? Is there a greater need for analysis in politics than in other areas of knowledge?
- What is the influence of politics on other areas of knowledge, such as the natural and human sciences, history, and the arts? What, conversely, might be the influence of these other areas of knowledge on politics?
- When the moral codes of individual nations conflict, can criteria be developed for an international morality that transcends them? What are the justifications for, and functions of, such ethical and political documents as the Geneva Conventions for warfare or the United Nations Universal Declaration of Human Rights?

Ethics and areas of knowledge

- Can one reasonably separate values in ethics from the definition of the discipline, its methods and its knowledge claims? How does it compare in this regard with other areas of knowledge?
- Do established moral values change in the face of new knowledge from other areas of knowledge?
- How does the method of ethics compare with methods in other areas of knowledge? Is the method in ethics closer to the axioms and reasoning of mathematics, or is it closer to the evidence and theory of the sciences, or perhaps to the argument by analogy, from the particular to the general, of art? To what extent is argument a method?
- How important is the study of literature, and of history, in an individual's ethical development? In what ways?
- Are there ethical obligations for humanity to treat the natural environment in a certain way? Are there constraints? If so, are the obligations and constraints based solely on a concern for the indirect effects on humanity, or are there other issues and principles involved?
- Should research be subject to ethical principles, or is the pursuit of knowledge through research intrinsically worthwhile and, of itself, value-free? Do some areas of knowledge (mathematics? natural science?) create knowledge that is more value-free than others (human science? history?)?
- What ethical responsibilities do researchers have when they are working with human subjects? In what ways do these differ from the ethical responsibilities they have when working with animals?
- Are there some types of knowledge that should not be sought on ethical grounds?
- Does art have to be morally good in order to be good art?
- Does the possession of knowledge carry an ethical responsibility?
- What moral responsibilities do we have with regard to knowledge that has been created or published by others (intellectual property)? What moral responsibilities do we have with regard to the Internet? What ethical issues are raised by highly skilled Internet users breaking into private and public computer systems?
- In what ways might CAS be said to promote ethical education? Is service to others, in whatever form, a moral obligation? If so, on what might the obligation be based? If not, why not?

Linking questions

[...] j'ay seulement fait icy un amas de fleurs estrangieres, n'y ayant fourny du mien que le filet a les lier.

[I have gathered a garland of other men's flowers, and nothing is mine but the cord that binds them.]

Michel de Montaigne

Connections between the elements of the TOK diagram can also be explored through further linking questions such as those offered below, which raise issues and concepts central to the course.

Belief

Under all that we think, lives all we believe, like the ultimate veil of our spirits.

Antonio Machado

- What may be meant by Ugo Betti's comment that "When you want to believe in something you also have to believe in everything that's necessary for believing in it"?
- How do beliefs about the world, and beliefs about what is valuable, influence the pursuit of knowledge?
- To what extent can beliefs be justified on the basis of ways of knowing? To what extent should they be justified this way?
- Does some degree of unjustified belief exist within each element of the TOK diagram?
- What may be meant by the following comment?

First there is a time when we believe everything without reasons, then for a little while we believe with discrimination, then we believe nothing whatever, and then we believe everything again—and, moreover, give reasons why we believe everything.

Georg Christoph Lichtenburg

Certainty

We know accurately only when we know little; with knowledge doubt increases.

Johann Wolfgang von Goethe

- What may be meant by Martin Luther King's claim that "Nothing is more dangerous than sincere ignorance and conscientious stupidity", or the following lines by W B Yeats?

The best lack all conviction, while the worst
Are full of passionate intensity.

- To what extent is certainty attainable within each of the ways of knowing or within each of the areas of knowledge?
- In the absence of evidence, is certainty possible? Can there be certainty about a claim that is false?

Culture

Just because we aren't all the same doesn't mean we have nothing in common.

Kirk Kerekes

- What beliefs or knowledge, if any, are independent of culture?
- How do cultures differ with respect to the ways of knowing and areas of knowledge that they value above others? How would one justify valuing one way, or one area, more than another?
- If one looks at most western compilations of quotations, it seems that most are attributed to dead, white, European males. Why might this be so? To what extent does the identity of the author of a quotation influence how its content is interpreted and how seriously its ideas are taken? What does the choice of quotations in this guide signify?

Evidence

Tell a man there are 300 billion stars in the universe and he'll believe you. Tell him a bench has wet paint on it and he'll have to touch to be sure.

Anon

- What constitutes **good evidence** within the different ways of knowing and areas of knowledge?
- Do sense perception, reason and emotion have the same weight in providing good evidence for claims within the different areas of knowledge? Must evidence always be expressed in words?
- What could be meant by "A mind all logic is like a knife all blade. It makes the hand bleed that uses it" (Tagore)?
- Which, if either, is the more definitive: facts from books, or facts from databases?

- Can a fact exist without a context?
- What does Luigi Pirandello mean by his comment that “My opinion is a view I hold until—well—until I find out something that changes it”?

Experience

- In what ways have your perspectives changed as a result of your experiences of working with other people in the Diploma Programme, for example, in science projects or CAS activities?
- What kinds of knowledge can be gained only through experience?
- In which areas of knowledge is experience of least importance?
- What are the dangers of equating personal experience and knowledge?
- CAS is often described as “experiential education”. In what ways is learning in CAS similar to or different from learning in other areas of the Diploma Programme?

Explanation

The reverse side also has a reverse side.

Japanese proverb

- What characteristics must an explanation possess to be considered **good** within the different ways of knowing and areas of knowledge?
- Must all good explanations make predictions with the same degree of success?
- Where would explanations about each area of knowledge rate, in a continuum from stories through models to reality? What is reality?
- What are the differences between persuasive explanations, good explanations and true explanations?
- What may be meant by Eugène Ionesco’s statement: “Explanation separates us from astonishment, which is the only gateway to the incomprehensible”?

Interpretation

- To what extent do the classification systems (labels and categories) adopted in the pursuit of knowledge affect the knowledge we obtain?
- How does interpretation occur within areas of knowledge? Within ways of knowing? Are some ways of knowing less open to interpretation than others?

Intuition

Intuition will tell the thinking mind where to look next.

Jonas Salk

- In attempting to understand what is commonly called “intuition”, is it best to think of it as a rapid cognitive process or perhaps, as some say, as an irrational or unmediated awareness of phenomena?
- Germaine Greer once commented that “The frequently celebrated female intuition...is after all only a facility for observing tiny insignificant aspects of behaviour and forming an empirical conclusion which cannot be syllogistically examined.” Does “feminine intuition” exist? Do men’s ways of knowing differ from those of women?
- To what extent is intuition to be taken seriously in the different areas of knowledge?

Technology

Before you become too entranced with gorgeous gadgets and mesmerizing video displays, let me remind you that information is not knowledge, knowledge is not wisdom, and wisdom is not foresight. Each grows out of the other and we need them all.

Arthur C Clarke

Although technology is certainly not new, rapid and accelerating advances in the fields of information and communication technology are commonly recognized as having profound effects on what we do and can know. Technology offers a means of communication that, more than any other, crosses cultures.

- In what ways has technology expanded knowledge? In what ways has it affected how much we value the different ways of knowing and areas of knowledge? What fields of study have been founded on technological developments?
- Does information technology, like deduction, simply allow the knower to arrange existing knowledge in a different way, without adding anything, or is this arrangement itself knowledge in some sense?
- To what extent do information and communication technologies influence the way we think about the world? To what extent do these technologies determine what we regard as valuable or important? Could it be argued that the increasing global dominance of a particular form of information technology gives rise to an increasing uniformity of thinking?
- Can it be said that every new technology affects the beliefs of individuals and societies, in both positive and negative ways? How can the impact of new technologies be predicted? How reliable are these predictions?
- What is the difference between data, information, knowledge and wisdom? Are there technologies specifically designed to impart data, information, knowledge and wisdom?
- In what ways do information and communication technologies influence the accessibility of information, and the reasons for believing such information to be true? Who controls such technologies, and what are the effects of such control?
- What did Sydney Harris mean when he said that “The real danger is not that computers will begin to think like men, but that men will begin to think like computers”?

- What is meant by Akio Morita's claim that "You can be totally rational with a machine. But if you work with people, sometimes logic has to take a back seat to understanding"?

Truth

They who know the Truth are not equal to those who love it, and they who love it are not equal to those who delight in it.

Confucius

- How useful are the truth tests of coherence, correspondence and pragmatism in arriving at knowledge?
- Is there such a thing as **false knowledge**?
- What is the difference between justified true belief and true belief?
- What is meant by the following statement?

As the wise test gold by burning, cutting and rubbing it... so are you to accept my words after examining them and not merely out of regard for me.

Buddha, *Compendium of All the Essences of Wisdom*

- To what extent does the truth of a statement depend on the language used to express it?

Values

To live is, in itself, a value judgment. To breathe is to judge.

Albert Camus

- How do values underlie the pursuit of truth in the different areas of knowledge? How, if at all, do they influence methodology?
- To what extent do the different ways of knowing and areas of knowledge influence the values adopted by individuals and societies?
- In what ways do values affect our representations of the world, for example, in language, maps, visual images, or statistics? When might a persuasive representation be praised as "effective", or, in contrast, condemned as "manipulative"?

At the end of nine or ten nights he realized, with a certain bitterness, that he could expect nothing from those students who accepted his teaching passively, but he could of those who sometimes risked a reasonable contradiction.

Jorge Luis Borges

Assessment outline

First examinations 2008

The assessment model in theory of knowledge (TOK) comprises two components, both of which should be completed within the 100 hours designated for the course.

Part 1 External assessment (40 points)

Essay on a prescribed title (1,200–1,600 words)

One essay on a title chosen from a list of ten titles prescribed by the IBO for each examination session.

Part 2 Internal assessment (20 points)

The presentation (approximately 10 minutes per student)

One presentation to the class.

One written presentation planning document and presentation marking form, using the relevant form from the *Vade Mecum*, including:

- the knowledge issue that is the focus of the presentation
- a summary in note form of the knowledge issues to be treated during the presentation
- achievement levels for each of the four assessment criteria, briefly justified, from both student and teacher.

The presentation should be an integral part of the TOK course.

The diploma points matrix

		Theory of knowledge					
		Excellent A	Good B	Satisfactory C	Mediocre D	Elementary E	Not submitted
Extended essay	Excellent A	3	3	2	2	1 + Failing condition*	N
	Good B	3	2	1	1	Failing condition*	N
	Satisfactory C	2	1	1	0	Failing condition*	N
	Mediocre D	2	1	0	0	Failing condition*	N
	Elementary E	1 + Failing condition*	Failing condition*	Failing condition*	Failing condition*	Failing condition*	N
	Not submitted	N	N	N	N	N	N

TOK points

Points awarded for the externally assessed component, part 1, the essay on a prescribed title (40 points), and for the internally assessed component, part 2, the presentation (20 points), are combined to give total out of 60. The grade boundaries are then applied, to determine the band (A to E) to which the student's performance in TOK belongs.

The band descriptors are:

- A Work of an **excellent** standard
- B Work of a **good** standard
- C Work of a **satisfactory** standard
- D Work of a **mediocre** standard
- E Work of an **elementary** standard

The band descriptor is used both to determine the contribution of TOK to the overall diploma score and to provide the basis for reporting to schools on each student's TOK performance.

TOK and the extended essay

The performance of a student in both Diploma Programme requirements, theory of knowledge and the extended essay, is determined according to the quality of the work, based on the application of the IB Diploma Programme assessment criteria. It is described by one of the band descriptors A–E. Using the two performance levels and the diploma points matrix, a maximum of **three** diploma points can be awarded for a student's combined performance.

A student who, for example, writes a **satisfactory** extended essay and whose performance in theory of knowledge is judged to be **good** will be awarded 1 point, while a student who writes a **mediocre** extended essay and whose performance in theory of knowledge is judged to be **excellent** will be awarded 2 points.

A student who fails to submit a TOK essay, or who fails to make a presentation, will be awarded N for TOK, will score no points, and will not be awarded a diploma.

Performance in both theory of knowledge and the extended essay of an **elementary** standard is a failing condition for the award of the diploma.

* From 2010 onwards, 28 points overall will be required to be eligible for the diploma if a student attains an "E" grade in either the extended essay or theory of knowledge. As previously, a grade "A" in one of the requirements earns an extra point even if the other is a grade "E". Attaining a grade "E" in both the extended essay and theory of knowledge continues to represent an automatic failure.

Assessment details

Nature of the tasks

The two assessment tasks, the essay and the presentation, are seen as complementary opportunities for students to show the extent to which they have achieved the TOK course objectives.

Both assessment tasks have at their centre reflection on knowledge issues but this reflection is demonstrated differently in each. The emphasis in the TOK presentation is on demonstrating an understanding of knowledge at work in the world. It is thus distinguished from the TOK essay, where students are required to show their TOK thinking skills in the discussion of a prescribed title that may be primarily conceptual in nature. Concrete examples play an important role in the essay in illustrating the main ideas or taking forward the argument but the presentation is in a sense an extensive TOK reflection on a single example, albeit one that is necessarily of a particular kind.

Neither the essay nor the presentation is primarily a research exercise, although some factual information may need to be included. If so, its reliability needs to be established through proper checks and referencing.

Part 1 Essay on a prescribed title (1,200–1,600 words)

General

Each student must submit for external assessment an essay on any one of the ten titles prescribed by the IBO for each examination session.

The titles ask generic questions about knowledge and are cross-disciplinary in nature. They may be answered with reference to any part or parts of the TOK course, to specific disciplines, or with reference to opinions gained about knowledge both inside and outside the classroom.

The titles are not meant to be treated only in the abstract, or on the basis of external authorities. In all cases, essays should express the conclusions reached by students through a sustained consideration of knowledge issues; claims and counterclaims should be formulated and main ideas should be illustrated with varied and effective examples that show the approach consciously taken by the student. Essays should demonstrate the student's ability to link knowledge issues to areas of knowledge and ways of knowing.

The chosen title must be used exactly as given; it must not be altered in any way. Students who modify the titles may gain very few or no points, since the knowledge issues that essays treat must be relevant to the titles in their prescribed formulation.

The essay must be well presented, clearly legible, and, where appropriate, include references and a bibliography.

Acknowledgments and references

Students are expected to acknowledge fully and in detail the work, thoughts or ideas of another person if incorporated in work submitted for assessment, and to ensure that their own work is never given to another student, either in the form of hard copy or by electronic means, knowing that it might be submitted for assessment as the work of that other student.

Factual claims that may be considered common knowledge (for example, "The second world war ended in 1945") do not need to be referenced. However, what one person thinks of as common knowledge, within a particular culture, may be unfamiliar to someone else, for example, an assessor in a different part of the world. If in doubt, give an authoritative source for the claim. Even the most carefully argued case is weak if its foundations are not secure.

The principle behind referencing in TOK is that it should allow the source to be traced. The simplest way to achieve this is to use consistently an accepted form of referencing. Guidance on such matters is available in the Diploma Programme *Extended Essay guide* or on reputable web sites, for example <http://www.wisc.edu/writing/Handbook/Documentation.html>.

A particular difficulty arises in the context of class notes or discussion. Reference to factual claims or ideas originating from these sources should be as precise as possible (for example, giving the name of the speaker and the date of the discussion). In cases where factual claims are fundamental to the argument of an essay, high academic standards demand that such claims should always be checked and a proper, traceable source supplied.

Bibliography

The TOK essay is **not** a research paper but, if specific sources are used, they must be acknowledged in a bibliography. The bibliography should include only those works (such as books, journals, magazines and online sources) consulted by the student.

As appropriate, the bibliography should specify:

- author(s), title, date and place of publication
- the name of the publisher or URL (<http://...>)
- the date when the web page was accessed, adhering to one standard method of listing sources.

Essay length

The essay on the prescribed title must be between 1,200 and 1,600 words in length. Extended notes or appendices are not appropriate to a TOK essay and may not be read.

The word count includes:

- the main part of the essay
- any quotations.

The word count does not include:

- any acknowledgments
- the references (whether given in footnotes or endnotes)

- any maps, charts, diagrams, annotated illustrations and tables
- the bibliography.

Students are required to indicate the number of words.

The role of the teacher

In relation to the student's essay on a prescribed title, the teacher has four principal responsibilities:

- to encourage and support the student in the writing of the essay
- to provide the student with advice on and guidance about the skills needed
- to ensure that the essay is the student's own work
- to complete the coversheet.

While the teacher is encouraged to discuss the prescribed titles with the students, they should be allowed to make the final choice of title and to develop their own ideas.

If a preliminary draft is produced, the teacher may read and comment on it, but is not permitted to edit it for the student. Only one draft may be presented to the teacher before the final essay is submitted. In general, teachers' comments should be about the essay as a whole, although it is acceptable to question or comment upon a particular paragraph. Where a student is writing in a second or third language, more flexibility may be appropriate: for example, the teacher may indicate that a particular sentence or word usage is difficult for the reader. However, here as elsewhere, it is the student's responsibility to correct mistakes and make improvements.

Authenticity

Teachers must ensure that essays are the student's own work. If there is doubt, authenticity should be checked by a discussion with the student about the content of the essay submitted and a scrutiny of one or more of the following:

- the student's initial proposal and outline
- the first draft of the essay
- the student's references and bibliography for the essay, where appropriate
- the style of the writing, which may reveal obvious discrepancies.

It should be made clear to students that they will be required to sign a written declaration when submitting the essay, to confirm that it is their own work. In addition, students must be made aware that their teachers will also be required to verify the claim made in the declaration (see the relevant edition of the *Vade Mecum* for procedures).

Part 2 The presentation

General

Students must make one or more individual and/or small group presentations to the class during the course. The maximum group size is **five**. If a student makes more than one presentation, the teacher should choose the best one (or the best group presentation in which the student participated) for the purposes of assessment.

The TOK presentation requires students to identify and explore the knowledge issues raised by a substantive real-life situation that is of interest to them. Aided by their teachers (see below), students can select the situation they will tackle from a more limited domain of personal, school, or community relevance, or from a wider one of national, international or global scope.

It is important that the situation that is selected is sufficiently circumscribed, so as to allow an effective treatment of knowledge issues. For this reason, it is wise to avoid topics so unfamiliar to the class that a great deal of explanation is needed before the underlying knowledge issues can be appreciated and explored.

Presentations may take many forms, such as lectures, skits, simulations, games, dramatized readings, interviews or debates. Students may use supporting material such as videos, MS PowerPoint presentations, overhead projections, posters, questionnaires, recordings of songs or interviews, costumes, or props. Under no circumstances, however, should the presentation be simply an essay read aloud to the class.

Each presentation will have two stages:

- an introduction, briefly describing the real-life situation and linking it to one or more relevant knowledge issue
- a treatment of the knowledge issue(s) that explores their nature and responses to them, and shows how these relate to the chosen situation.

A good presentation will demonstrate the presenter's personal involvement in the topic and show both why the topic is important and how it relates to other areas (see assessment criteria for more details).

Approximately 10 minutes per presenter should be allowed, up to a maximum in most cases of 30 minutes per group. Presentations should be scheduled to allow time for class discussion afterwards.

Interaction and audience participation are allowed during the presentation, not just in follow-up discussion, but there must be an identifiable substantial input from the presenter(s) that is assessable.

Before the presentation, the individual or group must give the teacher a copy of the presentation planning document (see below). The document is not to be handed out to the audience.

The role of the teacher

The presentation should be a positive TOK learning experience for the audience. With this goal in mind, teachers may assist students in the choice of topic (situation) for the presentation (or even supply it), and in a general way support their thinking about relevant knowledge claims, means of justification, the issue(s) to be posed, the perspectives to be addressed, and the connections that can be made. Often a variety of appropriate knowledge issues can be identified in the kind of real-life situations/contemporary problems most students will want to present. Teachers should help them concentrate their efforts on a clearly formulated one.

Each topic should be treated only once in a particular teaching group.

In summary, the teacher should give the presenter(s) every opportunity to construct a presentation that will advance the aims of the TOK course for the class as a whole. The teacher may support students by guiding them towards suitable approaches but should not do their work for them.

The date when each presentation is to take place should be given to students well in advance, to allow sufficient time for topics to be chosen and for material to be prepared.

Internal assessment documentation

Presentation planning document

Each student must complete and submit a presentation planning document. In a group presentation these may, but need not, be compiled individually. This document will summarize the thinking behind the topic, state the specific knowledge issues to be addressed, and present an outline of the intended treatment of them, in a maximum of one typed A4 page or equivalent. It should provide clear evidence of an inquiry in keeping with the aims and objectives of TOK, and meeting the requirements of the assessment criteria for the presentation. It must not be an essay, but should be in skeleton or bullet point form.

Content of presentation planning document

Please describe your planning for the presentation, either in the space below, or on an attached A4 word-processed page.

Your description must include:

- the knowledge issue that will be the focus of your presentation
- a summary in note form (for example, a bulleted list) of the way you plan to deal with knowledge issues during your presentation.

Presentation marking form

Both students and teachers must fill in the presentation marking form (the reverse side of the presentation planning document). Student presenters award themselves an achievement level for each of the four assessment criteria and briefly justify the level they have given. If the teacher considers the student mark accurate, they may simply reproduce it. Both students and teachers are required to certify the authenticity of the presentation work.

Participants in a group presentation should be marked individually, although all may be given the same marks if they have contributed equally. In a group presentation, not every student need speak for the same amount of time, but all students are expected to make a contribution and to participate actively.

Content of presentation marking form

Presenter's assessment

Each presenter should give themselves an achievement level for each of the four assessment criteria. Presenters should briefly justify the level they have given, in the "Comments/evidence" space provided.

Teacher's assessment

In the "Comments/evidence" box, please indicate briefly why you have given each level.

Both students and teachers are required to certify the authenticity of the presentation work.

The marks that will be used towards the final grade will be those entered in the teacher section of the form and transmitted via IBIS.

Verification of internal assessment

All schools must retain both the presentation planning document and the presentation marking form for each student until the close of session (15 September [15 March] for May [November] session schools).

In addition, some schools in each session will be required to record some or all of their presentations. These schools may be randomly chosen, or may be ones where a possible problem has been identified, for example, by analysis of the marks awarded in previous sessions. It is not necessary for schools to record presentations unless they are asked to do so, although it can be a useful exercise in order to standardize internal marking, where more than one teacher is involved.

Any adjustment (moderation) of the schools' internal assessment marks will take place on the basis of the evidence provided.

Examples of presentation topics

It should be noted that these are merely examples, meant only to illustrate the kinds of topics appropriate for TOK presentations. In particular, they are included to provide a concrete sense of what is meant by "real-life situation/contemporary problem" and to show how a knowledge issue can be identified in it and then treated from different perspectives. As well as guiding the selection of appropriate topics, the examples also illustrate ways that topics may be treated in the presentation, in accordance with the assessment criteria.

Real-life situation/contemporary problem: Global warming

- Knowledge issues: "Can we be certain that global warming is taking place?" or, "Does language (or the use of statistics, graphs, photographs) affect our view of whether or not the planet is undergoing global warming?"
- Format: Students analyse and critically evaluate video and newspaper clips involving the views of experts, politicians and activists who defend or dispute the notion that the planet is suffering from global warming. Each member of the group draws attention to different aspects of the evidence—the nature of the words used, statistics and graphs, photographs.
- Knower's (student's) point of view: As a group, students suggest that the evidence in favour of global warming seems compelling, but underline that in some cases it is difficult to separate some protagonists' positions and how they are formulated from the interest groups they represent.

Real-life situation/contemporary problem: Intensive agriculture

- Knowledge issue: "How can we know whether intensive farming methods are always harmful?"
- Format: Inputs by students representing the views of farmers in different circumstances from different parts of the world, cross-examined by a presenter and members of the audience.
- Knower's (student's) point of view: It may be easy to take a view on (to think we know) what is right in our own situation. Looked at globally the question is much more complicated.

Real-life situation/contemporary problem: Reliability of media reporting of science

- Knowledge issues: “What constitutes responsible journalism? How can we know whether scientific conclusions are justified?”
- Format: Summary and analysis of a newspaper article reporting on a new scientific study showing that a diet that contains no fat can lead to more weight gain than a similar diet that contains some fat (the original stimulus). Discussion of the quality of the newspaper article (what information ought it to contain, so that we can make a good judgment about the reliability of the claims made?) and of the scientific study it describes (how can we tell whether the evidence cited in the scientific study justifies its conclusions?).
- Knower’s (student’s) point of view: It is easy to tell that some newspapers are more concerned with entertainment than with truth. How easy is it to tell how much credibility to give to more serious stories?

Real-life situation/contemporary problem: What makes a work of art?

- Knowledge issues: “What is it that distinguishes an ordinary bag of rubbish from a major work of art that just looks like a bag of rubbish? Can anything be art—and, if so, what makes it into art?”
- Format: Skit of a TV talk show discussion about an incident when an artwork in an exhibition, consisting of a plastic bag full of rubbish, was mistakenly thrown out by a cleaner. Students role-play the host of the show, the artist of the work in question, a visual arts critic and a gallery owner, all of whom offer other examples of contentious contemporary art and their ideas about what distinguishes these artworks from non-art.
- Knower’s (student’s) point of view: Why are people prepared to dismiss contemporary art without understanding much about it, while often blindly believing scientific claims, however outlandish and improbable?

Real-life situation/contemporary problem: Demonstrations in China against the issue of a new history textbook in Japan

- Knowledge issues: Who should decide, and on what grounds, what history should be taught in schools? What part does the notion of historical truth play here?
- Format: Arguments for and against the Chinese attempt to tell the Japanese what they should teach about the actions of the Japanese army in China during the second world war. Should other countries be able to have a say in what the **Chinese** teach their children? What, in general terms, should determine a history curriculum?
- Knower’s (student’s) point of view: Is history too important to be left to historians?

Real-life situation/contemporary problem: What evidence is there about how dinosaurs looked and behaved?

- Knowledge issues: Are the methods of paleontology more like a science such as physics, or more like history?
- Format: Showing and discussion of a clip from the TV documentary *Walking with Dinosaurs* on how dinosaurs lived, showing a detailed scene from the life of a particular dinosaur, with a commentary presented as if this were a real scene.
- Knower’s (student’s) point of view: How far is it legitimate for TV programmes to go, to make their subject matter entertaining?

Assessment criteria

Using the assessment criteria

The method of assessment used by the IBO is criterion-related. That is to say, the method of assessing the essay on a prescribed title and the presentation in TOK judges each in relation to identified assessment criteria and not in relation to the work of other students.

- There are **four** assessment criteria (A–D) for the essay on a prescribed title, and **four** (A–D) for the presentation. For each assessment criterion, achievement level descriptors are defined that concentrate on positive achievement, although for the lower levels (zero is the lowest level of achievement) failure to achieve may be included in the description.
- The aim is to find, for each criterion, the descriptor that conveys most adequately the achievement level attained by the student. The process, therefore, is one of approximation. In the light of any one criterion, a student's work may contain features denoted by a high achievement level descriptor combined with features appropriate to a lower one. A professional judgment should be made in identifying the descriptor that approximates most closely to the work.
- Having scrutinized the work to be assessed, the descriptors for each criterion should be read, starting with level 0, until one is reached that describes an achievement level that the work being assessed does not match as well as the previous level. The work is therefore best described by the preceding achievement level descriptor and this level should be recorded. In cases where a single descriptor covers two levels, a further decision is needed as to whether the work fulfills the descriptor to a greater or lesser extent.
- Only whole numbers should be used, not partial points such as fractions or decimals.
- The highest descriptors do not imply faultless performance and assessors and teachers should not hesitate to use the extremes, including zero, if they are appropriate descriptions of the work being assessed.
- Descriptors should not be considered as marks or percentages, although the descriptor levels are ultimately added together to obtain a total. It should not be assumed that there are other arithmetical relationships; for example, a level 4 performance is not necessarily twice as good as a level 2 performance.
- A student who attains a particular achievement level in relation to one criterion will not necessarily attain similar achievement levels in relation to the others. It should not be assumed that the overall assessment of the students will produce any particular distribution of scores.

Part 1 Essay on a prescribed title

A Understanding knowledge issues

This criterion is concerned with the extent to which the essay focuses on knowledge issues relevant to the prescribed title, and with the depth and breadth of the understanding demonstrated in the essay.

A **relevant** knowledge issue is one that directly relates to the prescribed title undertaken, or one that the essay has shown is important in relation to it.

Depth of understanding is often indicated by drawing distinctions within ways of knowing and areas of knowledge, or by connecting several facets of knowledge issues to these.

Breadth of understanding is often indicated by making comparisons between ways of knowing and areas of knowledge. *Since not all prescribed titles lend themselves to an extensive treatment of an equal range of areas of knowledge or ways of knowing, this element in the descriptors should be applied with concern for the particularity of the title.*

- Does the essay demonstrate understanding of knowledge issues that are relevant to the prescribed title?
- Does the essay demonstrate an awareness of the connections between knowledge issues, areas of knowledge and ways of knowing?

Achievement level	Descriptor
0	Level 1 is not achieved.
1–2	The essay includes very little treatment of knowledge issues that are relevant to the prescribed title and demonstrates little understanding of them. If present, areas of knowledge and/or ways of knowing are merely mentioned.
3–4	The essay includes some treatment of knowledge issues that are relevant to the prescribed title and demonstrates a rudimentary understanding of them. Some links to areas of knowledge and/or ways of knowing have been attempted but they are largely ineffective.
5–6	For the most part the essay treats knowledge issues that are relevant to the prescribed title, and demonstrates some understanding of them. Some effective links are drawn between areas of knowledge and/or ways of knowing.
7–8	The essay consistently maintains as its focus knowledge issues that are relevant to the prescribed title. Effective links and some comparisons between areas of knowledge and/or ways of knowing are drawn, so that the essay demonstrates a good understanding of the knowledge issues under consideration.
9–10	The essay consistently maintains as its focus knowledge issues that are relevant to the prescribed title. Effective links and comparisons between areas of knowledge and/or ways of knowing are elaborated, so that the essay demonstrates a sophisticated understanding of the knowledge issues under consideration.

B Knower's perspective

- To what extent have the knowledge issues relevant to the prescribed title been connected to the student's own experience as a learner?
- Does the student show an awareness of his or her own perspective as a knower in relation to other perspectives, such as those that may arise, for example, from academic and philosophical traditions, culture or position in society (gender, age, and so on)?
- Do the examples chosen show an individual approach consciously taken by the student, rather than mere repetition of standard commonplace cases or the impersonal recounting of sources?

Achievement level	Descriptor
0	Level 1 is not achieved.
1–2	The essay shows no evidence of independent thinking about the knowledge issues related to the prescribed title. There is limited personal engagement with the knowledge issues and no attempt to acknowledge or explore different perspectives. There are no appropriate examples.
3–4	The essay shows very little evidence of independent thinking about the knowledge issues related to the prescribed title. There is some personal engagement with the knowledge issues. Different perspectives may be mentioned but there is no attempt to explore them. Examples chosen are sometimes appropriate.
5–6	The essay shows some evidence of independent thinking about the knowledge issues related to the prescribed title. The student has shaped the essay in a way that shows personal engagement with the knowledge issues. There is an awareness that different perspectives may exist, although there may be little attempt to explore these. Examples chosen are appropriate, although there may be little variety in their sources.
7–8	The essay shows adequate evidence of independent thinking about the knowledge issues related to the prescribed title. The student has shaped the essay in a way that shows thoughtful, personal engagement with the knowledge issues and some self-awareness as a knower. There is an acknowledgment of different perspectives and some attempt to explore these. Examples chosen are effective, with some variety.
9–10	The essay shows much evidence of independent thinking about the knowledge issues related to the prescribed title. The student has shaped the essay in a way that shows both a personal, reflective exploration of the knowledge issues and significant self-awareness as a knower. There is serious consideration of different perspectives. Examples chosen are varied and effectively used.

C Quality of analysis of knowledge issues

- What is the quality of the inquiry into knowledge issues?
- Are the main points in the essay justified? Are the arguments coherent and compelling?
- Have counterclaims been considered?
- Are the implications and underlying assumptions of the essay's argument identified?

This criterion is concerned only with knowledge issues that are relevant to the prescribed title. Analysis of knowledge issues that are not relevant to the prescribed title is not assessed.

Achievement level	Descriptor
0	Level 1 is not achieved.
1–2	There is no inquiry into knowledge issues, only description. There are very few attempts at justifying the main points of the essay. There is very little evidence of any awareness of counterclaims.
3–4	The inquiry partly explores, but largely describes, knowledge issues. There is some justification of main points and some coherent argument. Counterclaims are implicitly identified.
5–6	The inquiry explores knowledge issues. Most points are justified; most arguments are coherent. Some counterclaims are considered.
7–8	The inquiry explores with some insight, in some depth and/or detail, knowledge issues. All, or nearly all, main points are justified and arguments are coherent. Counterclaims are explored. Implications of the essay's argument are identified.
9–10	The inquiry explores with a high degree of insight, in considerable depth and/or detail, knowledge issues. All main points are justified and arguments are coherent and compelling. Counterclaims are explored and evaluated. Implications and underlying assumptions of the essay's argument are identified.

D Organization of ideas

- Is the essay well organized and relevant to the prescribed title?
- Does the use of language assist the reader's understanding and avoid confusion? Are central terms explained or developed clearly in a way that assists comprehension?

Note: This task is not a test of "first language" linguistic skills. No account should be taken of minor errors unless they significantly impede communication.

- When factual information is used or presented, is it accurate and, when necessary, referenced? "Factual information" includes generalizations.
- If sources have been used, have they been properly referenced in a way that allows them to be traced (Internet references must include the date on which they were accessed)?

Note: Not all essays require sources or references (see guidance in "Assessment details").

An essay that fails to meet the word limit of 1,200–1,600 words will not score above level 4 on this criterion.

An essay that has no relevance to the prescribed title will score 0 on this criterion.

Achievement level	Descriptor
0	Level 1 is not achieved.
1–2	The essay on the prescribed title is very poorly structured, with little overall organization. It is difficult to understand what the writer intends. Factual information used to support arguments may contain significant inaccuracies. Sources of information and ideas may not be acknowledged and there is no attempt at referencing.
3–4	The essay on the prescribed title is poorly structured, with limited overall organization. It is sometimes difficult to understand what the writer intends. There may be some attempt to explain or explore the meaning of terms but this contributes little to conceptual clarity. Factual information used to support arguments is not always reliable (there may be minor inaccuracies; sources of more important information may be missing or unreliable). Some sources of information and ideas are acknowledged; there is some attempt at referencing but it is not complete, nor sufficiently precise to permit tracing of sources.
5–6	The essay on the prescribed title is satisfactorily structured, with adequate overall organization. In general, concepts are used clearly: if concepts are explained, explanations are generally adequate. Factual information used to support arguments is mostly correct. Most sources of information and ideas are acknowledged; most referencing permits tracing of sources, although some precision may be lacking. The word limit has been met.
7–8	The essay on the prescribed title is well structured, with a clear overall organization. Concepts are used or developed clearly: some explanations are included, where appropriate. Factual information used to support arguments is correct. Sources of information and ideas are acknowledged; most referencing permits tracing of sources. The word limit has been met.

Achievement level	Descriptor
9–10	The essay on the prescribed title is very well structured, with an effective overall organization. Concepts are used clearly and, where appropriate, refined by helpful explanations. Factual information used to support arguments is correct. Sources of information and ideas are acknowledged; all referencing permits tracing of sources. The word limit has been met.

Note

In cases where an essay deserves a high mark for its quality of organization and clarity, but a low mark because of factual inaccuracy or lack of sourcing (or vice versa), examiners will make a judgment about which level to award. In general, more emphasis should be placed on the larger issues (organization and clarity) and less on the more minor ones (factual accuracy and sourcing). An important consideration is the status of the error or unsourced fact in the overall argument. If it is of marginal significance, little or no account should be taken of it. If it is central to the whole argument and undermines the value of the entire essay, then it can be argued that the quality of organization is itself much reduced. Conversely, meticulous acknowledgment of sources cannot improve the organization of a poorly structured essay.

Part 2 Presentation

A Identification of knowledge issue

- Did the presentation identify a relevant knowledge issue involved, implicit or embedded in a real-life situation?

Achievement level	Descriptor
0	Level 1 was not achieved.
1–2	The presentation referred to a knowledge issue but it was irrelevant to the real-life situation under consideration.
3–4	The presentation identified a knowledge issue that was in some ways relevant to the real-life situation under consideration.
5	The presentation identified a knowledge issue that was clearly relevant to the real-life situation under consideration.

B Treatment of knowledge issues

- Did the presentation show a good understanding of knowledge issues, in the context of the real-life situation?

Achievement level	Descriptor
0	Level 1 was not achieved.
1–2	The presentation showed some understanding of knowledge issues.
3–4	The presentation showed an adequate understanding of knowledge issues.
5	The presentation showed a good understanding of knowledge issues.

C Knower's perspective

- Did the presentation, particularly in the use of arguments and examples, show an individual approach and demonstrate the significance of the topic?

Achievement level	Descriptor
0	Level 1 was not achieved.
1–2	The presentation, in its use of arguments and examples or otherwise, showed limited personal involvement and did not demonstrate the significance of the topic.
3–4	The presentation, in its use of arguments and examples or otherwise, showed some personal involvement and adequately demonstrated the significance of the topic.
5	The presentation, in its distinctively personal use of arguments and examples or otherwise, showed clear personal involvement and fully demonstrated the significance of the topic.

D Connections

- Did the presentation give a balanced account of how the topic could be approached from different perspectives?
- Did the presentation show how the positions taken on the knowledge issues would have implications in related areas?
- In awarding the higher achievement levels, the emphasis should be more on the quality of the consideration of connections than on the quantity of connections mentioned.

Achievement level	Descriptor
0	Level 1 was not achieved.
1–2	The presentation explored at least two different perspectives to some extent.
3–4	The presentation gave a satisfactory account of how the question could be approached from different perspectives, and began to explore their similarities and differences.
5	The presentation gave a clear account of how the question could be approached from different perspectives and considered their implications in related areas.

References

Most, if not all, of the quotations in this guide are intended as prompts for discussion. While it is right to try to give appropriate credit, where possible, to their authors, this does not have quite the same necessity as when quotations are intended as authoritative statements, used to establish facts or as foundations of an argument. We have therefore chosen to retain some quotations whose sources we have been unable to identify.

Anouilh, Jean. 1951. *La répétition ou l'amour puni* in *La Table Ronde*. Paris. Les Editions Gallimard, coll. Folio, acte II, pp 39–42.

Betti, Ugo. 1964. *Struggle Till Dawn* in *Three Plays on Justice: Landslide. Struggle Till dawn. The Fugitive*. McWilliam, GH (trans). USA. Chandler Pub. Co. Originally published in 1949. Quoted at http://www.quotationspage.com/quotes/Ugo_Betti, accessed 17 May 2005.

Bhagavad Gita. Untraceable.

Borges, Jorge Luis. 2000. From "The Circular Ruins" in the collection *Labyrinths*. London. Penguin Books Ltd.

Bronowski, Jacob. 1973. *The Ascent of Man*. Boston. Little Brown & Co. Quoted at <http://unr.edu/homepage/jcannon/ejse/campbell.html>, accessed 12 May 2005.

Brown, Rita Mae. 1989. *Starting From Scratch*. USA. Bantam.

Buddha, "Sacred Aphorisms", in *The Teaching of Buddha, The Buddhist Bible* (Ch 7—The Way of Practice). Quoted at http://hinduwebsite.com/sacredscripts/buddha_truth.htm, accessed 13 May 2005.

Buddha, in *Jñānasāra-samuccaya (Compendium of All the Essences of Wisdom)* attributed to Aryadeva. Quoted at

http://www.namebangdzo.com/glossary/search.php?letter=%5B%5B:alnum:%5D%5D&radio_1=6.

There are slightly different versions of this same teaching in other texts, for example, *Anguttara Nikāya* vol. i, p 189; *Kindred Sayings*, part i, pp 171, 172, according to

<http://www.saigon.com/~anson/ebud/budtch/budteach15.htm>, both sites accessed on 17 May 2005.

Camus, Albert. 1951. *The Rebel*. Quoted at <http://www.quotegarden.com/misc1.html>, accessed 17 May 2005.

Carlyle, Thomas. 1841. *On Heroes, Hero-worship and the Heroic in History* (Ch 1). Quoted at <http://www.nalanda.nitc.ac.in/resources/english/etext-project/sociology/heros/chapter1.html>, accessed 13 May 2005.

Carroll, Lewis. 1872. "The Walrus and the Carpenter", from *Through the Looking Glass*. Quoted at <http://www.online-literature.com/view.php/lookingglass>, accessed 12 May 2005.

Clarke, Arthur C. 1995. Speech in Sri Lanka, relayed live to Washington DC. Video record at <http://search.nap.edu/html/techgap/media/aclarke.html>.

Confucius. *Confucian Analects* (Book 6, Ch 18). Legge, James (trans). Quoted at <http://www.sacred-texts.com/cfu/cfu.htm>, accessed 18 May 2005.

Dick, Philip K. 1968. *Do Androids Dream of Electric Sheep?* New York. Doubleday. Basis for the 1982 film *Blade Runner* directed by Ridley Scott. USA. Warner Studios.

- Ford, Henry. 1916. Interview in *Chicago Tribune*. 25 May 1916.
- Geertz, Clifford. 2000. *The Interpretation of Culture: Selected Essays*. New York. Basic Books. Originally published in 1973.
- Gibran, Kahlil. "On religion" in *The Prophet*. Quoted at <http://gutenberg.net.au/ebooks02/0200061.txt>, accessed 6 May 2005.
- Gide, André. 1951. *Journal 1889–1939*. Bibliothèque de la Pléiade. Paris. Les Editions Gallimard. Originally published in 1927. Quoted at <http://www.bribes.org/logique.htm>, accessed 21 April 2005.
- Goethe, Johann Wolfgang von. *Spruche in Prosa*. Quoted at <http://www.giga-usa.com/gigaweb1/quotes2/quautgoethejohannwx008.htm>, accessed 9 May 2005.
- Greer, Germaine. Untraceable.
- Harris, Sydney J. 1988. In Eves, H. *Return to Mathematical Circles*. Boston. Prindle, Weber and Schmidt. Quoted at http://www.personal.psu.edu/faculty/s/a/sac130/links/links_rough.html, accessed 16 May 2005.
- Hume, David. 1972. *A Treatise of Human Nature: Books Two and Three*. London. Fontana.
- Huxley, Aldous. 1947. *The Olive Tree*. Published in *Collected Works*. London. Chatto and Windus. Originally published in 1936.
- Huxley, Aldous. 1954. *The Doors of Perception*. London. Chatto and Windus.
- Ionesco, Eugène. Untraceable
- Kerekes, Kirk. Untraceable
- King, Martin Luther, Jr. 1963. *Strength to Love*. Augsburg. Fortress Publishers.
- Lichtenberg, Georg Christoph. *Aphorisms (1764–1799)*. Stern, JP (trans). Quoted in Ehrlich, Eugene and DeBruhl, Marshall. 1996. *International Thesaurus of Quotations*. HarperPerennial.
- Machado, Antonio. 1943. *Juan de Mairena*. Belitt, Ben (trans). Quoted in Ehrlich, Eugene and DeBruhl, Marshall. 1996. *International Thesaurus of Quotations*. HarperPerennial.
- Maeterlinck, Maurice. 1896. *Le Trésor des humbles*. (Translated by Sutro, Alfred. 1899. *The Treasure of the Humble*. New York. Dodd, Mead & Company.)
- Montaigne, Michel de. *Essays* (Book III, Ch XII). Quoted at http://www.giga-usa.com/quotes/authors/michel_eyquen_montaigne_a003.htm, accessed 9 May 2005.
- Morita, Akio. 1988. *Made in Japan*. London. Fontana. Quoted at <http://www.strategyblueprint.com/bloomsbury/LIB2.asp?essayid=ID82E148DC-DF5C-11D5-849C-00508B2CCA66>, accessed 16 May 2005.
- Orwell, George. 1949. *1984*. London. Secker and Warburg.
- Panchatantra*. Edgerton, Franklin (trans). Quoted in Ehrlich, Eugene and DeBruhl, Marshall. 1996. *International Thesaurus of Quotations*. HarperPerennial.
- Péguy, Charles. 1931. *Clio, dialogue de l'histoire et de l'âme païenne* (1909). Paris. Les Editions Gallimard. Quoted in English in Ehrlich, Eugene and DeBruhl, Marshall. 1996. *International Thesaurus of Quotations*. HarperPerennial. See also a French version at <http://caullery.free.fr/histoire/preface.htm>, accessed 19 May 2005.

Picasso, Pablo. (Widely attributed to Picasso. According to Green, J, 1982, *A Dictionary of Contemporary Quotations*, an English version dates from 1958. Ehrlich and DeBruhl (see above) gives a date of 21 September 1958.)

Pirandello, Luigi. Untraceable.

Poincaré, Henri. 1902. *La Science et l'hypothèse*. Paris. Flammarion. Quoted at <http://membres.lycos.fr/clo7/grammaire/science.htm>, accessed 18 May 2005.

Popper, Karl. Untraceable.

Russell, Bertrand. 1917. *Mysticism and Logic* (Ch 4). London. Allen and Unwin.

Russell, Bertrand. 1950. From "An Outline of Intellectual Rubbish" in the collection, *Unpopular Essays*. New York. Simon and Schuster. Quoted at <http://www.positiveatheism.org/hist/quotes/russell.htm>, accessed 6 May 2005.

Sa'di. *The Gulistan*. Ch 8, XLII. Ross, James (trans). (Available online at <http://www.gutenberg.org/etext/13060>, accessed 19 April 2005.)

Salk, Jonas. Untraceable.

Santayana, George. 1905. *The Life of Reason: Reason in Common Sense*. New York. Scribner's.

Sears, Paul B. Quoted in Dillon, Lawrence S. 1964. *The Science of Life*. New York. Macmillan. Quoted at <http://mpec.sc.mahidol.ac.th/radok/preedeeporn/CquotS.htm#Sears>, accessed 6 May 2005.

Solomon, Robert. 1988. "On emotions as judgments". *American Philosophical Quarterly*. Vol 25, number 2, pp 183–91.

Sontag, Susan. 1994. *Against Interpretation*. London. Vintage. Originally published in 1966.

Stebbing, Susan. 1939. *Thinking to Some Purpose*. Harmondsworth. Pelican.

Tagore, Rabindranath. 1916. *Stray Birds* (p 193) [translated from Bengali to English by the author]. New York. The Macmillan Company. Quoted at <http://library.beau.org/gutenberg/etext04/stryb10.txt>, accessed 16 May 2005.

Yeats, WB. 1921. "The Second Coming", in *Michael Robartes and the Dancer*. Dublin. Cuala Press.

Zappa, Frank. This quotation is widely attributed to Zappa but the precise reference is untraceable and the attribution is highly debatable. (See <http://home.pacifier.com/~ascott/they/tamilda.htm>, accessed 13 May 2005.)

