Knowledge in TOK

Knowledge is the raw material of the TOK course. It is important that students and teachers have a clear idea of what might be meant by the term “knowledge”, however, this is not such a simple matter. Thinkers have wrestled with the problem of a simple definition of knowledge since before the time of Plato, without substantial consensus. How can we expect students to be able to tackle this question satisfactorily?

TOK is not intended to be a course in philosophy. While there might be a certain degree of overlap in the terms that are used, the questions that are asked, or the tools that are applied to answer these questions, the approach is really quite different. It is not a course of abstract analysis of concepts. TOK is designed to apply a set of conceptual tools to concrete situations encountered in the student’s Diploma Programme subjects and in the wider world outside school. The course should therefore not be devoted to a technical philosophical investigation into the nature of knowledge.

It is useful for students to have a rough working idea of knowledge at the outset of the course. Towards the end of the course this picture will have become more rounded and refined. A useful metaphor for examining knowledge in TOK is a map. A map is a representation, or picture, of the world. It is necessarily simplified—indeed its power derives from this fact. Items not relevant to the particular purpose of the map are omitted. For example, one would not expect to see every tree and bush faithfully represented on a street map designed to aid navigation around a city—just the basic street plan will do. A city street map, however, is quite a different thing to a building plan of a house or the picture of a continent in an atlas. So knowledge intended to explain one aspect of the world, say, its physical nature, might look really quite different to knowledge that is designed to explain, for example, the way human beings interact.

Knowledge can be viewed as the production of one or more human beings. It can be the work of a single individual arrived at as a result of a number of factors including the ways of knowing. Such individual knowledge is called personal knowledge in this guide. But knowledge can also be the work of a group of people working together either in concert or, more likely, separated by time or geography. Areas of knowledge such as the arts and ethics are of this form. These are examples of shared knowledge. There are socially established methods for producing knowledge of this sort, norms for what counts as a fact or a good explanation, concepts and language appropriate to each area and standards of rationality. These aspects of areas of knowledge can be organized into a knowledge framework.

Shared and personal knowledge

In many languages, the verb “to know” has two first person forms: “I know” and “we know”. “I know” refers to the possession of knowledge by an individual—personal knowledge. “We know” refers to knowledge that belongs to a group—shared knowledge. It can be useful in TOK to draw a distinction between these two forms of knowledge, as illustrated below.
Shared knowledge

Shared knowledge is highly structured, is systematic in its nature and the product of more than one individual. Much of it is bound together into more or less distinct areas of knowledge such as the familiar groups of subjects studied in the Diploma Programme. While individuals contribute to it, shared knowledge does not depend only upon the contributions of a particular individual—there are possibilities for others to check and amend individual contributions and add to the body of knowledge that already exists.

Examples are easy to come by.

- Physics is a subject discipline with knowledge that is shared. Many have access to it and can contribute to it. Much of the work done is by teams of people building on existing knowledge. While individuals can and do contribute to this body of knowledge, the work of individuals is subject to group processes such as peer review and replication of experimental results before it becomes part of the corpus.

- The knowledge required to build a computer is also shared. It is unlikely that there is an individual who has the knowledge of building such a device from scratch (rather than simply assembling it from pre-constructed components). Yet we know how to make computers. A computer is the result of a complex worldwide cooperative effort.

Shared knowledge changes and evolves over time because of the continued applications of the methods of inquiry—all those processes covered by the knowledge framework. Applying the methodology belonging to an area of knowledge has the effect of changing what we know. These changes might be slow and incremental—areas of knowledge possess a certain stability over time. However, they could also be sudden and dramatic, revolutionary shifts in knowledge or paradigm shifts, as an area of knowledge responds to new experimental results, say, or advances in the underlying theory.

There might be areas of knowledge that are shared by all of us. The subjects studied in the Diploma Programme might fall into this category. Of course it is not the case that every IB student understands higher level biology or geography, but rather it is knowledge that is available subject to certain conditions.
We are all members of other smaller groups too. We are members of ethnic groups, national groups, age groups, gender groups, religious groups, interest groups, class groups, political groups, and so on. There might be areas of knowledge that we share as members of these groups which are not available to those outside, such as knowledge that is anchored in a particular culture or in a particular religious tradition. This might raise questions regarding the possibility of knowledge transgressing the boundaries of the group.

Here are some examples of such questions:

- Is it really possible to have knowledge of a culture in which we have not been raised?
- Are those outside a particular religious tradition really capable of understanding its key ideas?
- Does there exist a neutral position from which to make judgments about competing claims from different groups with different traditions and different interests?
- To what extent are our familiar areas of knowledge embedded in a particular tradition or to what extent might they be bound to a particular culture?

Thinking about shared knowledge allows us to think about the nature of the group that does the sharing. It allows international-mindedness into our exploration of knowledge questions.

**Personal knowledge**

Personal knowledge, on the other hand, depends crucially on the experiences of a particular individual. It is gained through experience, practice and personal involvement and is intimately bound up with the particular local circumstances of the individual such as biography, interests, values, and so on. It contributes to, and is in turn influenced by, an individual's personal perspective.

Personal knowledge is made up of:

- skills and procedural knowledge that I have acquired through practice and habituation
- what I have come to know through experience in my life beyond academia
- what I have learned through my formal education (mainly shared knowledge that has withstood the scrutiny of the methods of validation of the various areas of knowledge)
- the results of my personal academic research (which may have become shared knowledge because I published it or made it available in some other way to others).

Personal knowledge therefore includes what might be described as skills, practical abilities and individual talents. This type of knowledge is sometimes called procedural knowledge, and refers to knowledge of how to do something, for example, how to play the piano, how to cook a soufflé, how to ride a bicycle, how to paint a portrait, how to windsurf, how to play volleyball and so on.

Compared to shared knowledge, personal knowledge is often more difficult to communicate to others. Sometimes it has a stronger linguistic component and is communicable to others, but often it cannot easily be shared. For example, an experienced tea taster who has developed their palette through years of experience of tasting different teas will have a complex knowledge of tea tastes. But the tea taster might find it difficult to describe the taste of a particular tea in words in a way that can be understood by others. The taster might use metaphor and simile to try to relate the experience of drinking this tea to others but the task is a difficult one. In this way personal knowledge is frequently characterized by this difficulty in sharing.

Personal knowledge also includes a map of our personal experiences of the world. It is formed from a number of ways of knowing such as our memories of our own biography, the sense perceptions through which we gain knowledge of the world, the emotions that accompanied such sense perceptions, the values and significance we place on such thoughts and feelings.
Like shared knowledge, personal knowledge is not static, but changes and evolves over time. Personal knowledge changes in response to our experiences. What is known by an 18-year-old could be quite different to what he or she knew at only 6 years of age. The various ways of knowing covered in the TOK course contribute to these changes.

**Links between shared and personal knowledge**

Clearly there are links and interactions between shared knowledge and personal knowledge. These are discussed in more depth in the knowledge framework.

Consider the example of a scientist such as Albert Einstein who has contributed much to modern physics. Clearly, he had some personal qualities that enabled him to see further than some of his peers. He had personal knowledge, a way of looking at things perhaps, that he was able to use to propel his exploration of the difficult questions that characterized the physics of the early 20th century. But his insights had to go through a thorough process of review before being accepted as part of the shared body of knowledge that is the discipline of physics.

There were disciplinary-specific methods that placed demands on Einstein’s thought. For example, his ideas had to be logically consistent, had to conform to previous experimental findings and had to go through a process of peer review. They also had to provide predictions that could be independently tested and verified (for example, the predictions made about the visibility of stars normally obscured by the sun in the solar eclipse of 1919). Only then could Einstein’s vision become an accepted part of physics. This illustrates how personal knowledge leads to advances in shared knowledge.

The reverse process can and does occur. Shared knowledge can have a big effect on our personal view of the world. Not only do the familiar areas of knowledge impinge on our personal experiences—someone studying economics might regard everyday shopping in a different light as a result of studying economics—but shared knowledge as membership of our cultural, ethnic, gender and other groups might influence our world view. This is what we call perspective. Membership of such groups provides a horizon against which the significance of the events of our lives is measured. Acknowledgment of such perspectives is an important goal of the TOK course.

From an individual perspective, shared knowledge often appears in the form of an authority—a source of knowledge whose justification is not immediately available to the individual. An example here is the authority of medical science to the patient who is not trained in medicine.

**Balance between shared and personal knowledge**

It is important that the TOK course reflects the balance between shared knowledge and personal knowledge. Too much emphasis on the personal at the expense of the shared is likely to result in a course that is oriented towards the subjective experiences of the students and does not look at knowledge beyond the individual to how knowledge is constructed in the wider world. There is a tendency for such a course to become a succession of personal anecdotes strung together with little or no analysis.

Biasing the course in the opposite direction risks losing the important links between the areas of knowledge and the individual knower. Shared knowledge has a significance and value for the individual that gives it relevance and importance. There is a danger that such a TOK course could become too arid and fact-oriented. Making the distinction central to the course brings the balance of these two elements to the forefront.

The ideal balance might not be 50:50; it is likely that significantly less time will be spent on personal knowledge and more on shared knowledge. It is also likely that the best strategy is not to teach them entirely separately. It seems difficult to examine areas of knowledge without considering the impact on individual knowers. Similarly, it seems difficult to examine personal knowledge in a vacuum without acknowledging that as individuals we are embedded in a web of social relationships.
Knowledge claims

In TOK there are two types of knowledge claims.

- Claims that are made within particular areas of knowledge or by individual knowers about the world. It is the job of TOK to examine the basis for these first-order claims.
- Claims that are made about knowledge. These are the second-order claims made in TOK that are justified using the tools of TOK which usually involve an examination of the nature of knowledge.

Here are some examples:

- “There are an infinite number of prime numbers.” This is a first-order knowledge claim because it resides firmly inside the area of knowledge mathematics. It is established using the method of mathematical proof.
- “Mathematical knowledge is certain.” This is a second-order knowledge claim because it is about mathematical knowledge. We establish this by examining the methods of mathematics themselves using the tools of TOK.

Both types of knowledge claims might be found in TOK. The first type will feature in examples offered in the essay and presentation illustrating the manner in which areas of knowledge go about the business of producing knowledge. The second type will constitute the core of any piece of TOK analysis.

Knowledge questions

TOK is primarily concerned with knowledge questions. This phrase is used often in describing what is seen in a good TOK presentation or a good TOK essay. An essay or presentation that does not identify and treat a knowledge question has missed the point. It also occurs in the assessment descriptors that examiners use to mark the essay and that the teacher uses to mark the presentation. To put it briefly, the whole point of the presentation and essay tasks is to deal with knowledge questions.

Knowledge questions are questions about knowledge, and contain the following features.

- Knowledge questions are questions about knowledge. Instead of focusing on specific content, they focus on how knowledge is constructed and evaluated. In this sense, knowledge questions are a little different from many of the questions dealt with in the subject classrooms. In this way, they are considered second-order questions in TOK.
- Knowledge questions are open in the sense that there are a number of plausible answers to them. The questions are contestable. Dealing with open questions is a feature of TOK. Many students encountering TOK for the first time are struck by this apparent difference from many of the other classes in their school experience. Many find the lack of a single “right” answer slightly disorienting. Nevertheless, knowledge questions underlie much of the knowledge that we take for granted. Much of the disagreement and controversy encountered in daily life can be traced back to a knowledge question. An understanding of the nature of knowledge questions can allow a deeper understanding of these controversies.
Knowledge questions should be expressed in general terms, rather than using subject-specific terms. For example, instead of a question focusing on a specific model in development economics, such as the Harrod-Domar model, a knowledge question might focus on the reliability of modelling as a method of gaining knowledge in economics.

It might be worth considering and discussing with students why questions of knowledge are open and therefore so interesting. Why is it that the typical TOK question does not have one straightforward correct answer? Students might find themselves facing this sort of question in class. Perhaps a typical response might start with “it depends what we mean by ...” In other words, the first task in trying to answer a TOK question is to establish an understanding of the key concepts involved. There may be a number of different ways of thinking about these concepts. Each might give rise to a different analysis and ultimately a different answer to the question.

It is inevitable that personal perspectives will play a part in the judgments made in any analysis. The intellectual resources that each of us has to draw upon might well be different and lead us to different or even diametrically opposed conclusions.

The possibility of a lack of unanimity in answering TOK questions can be initially challenging for students. After all, in mathematics a student getting a different answer to his or her neighbour can be a cause for concern, prompting the thought that one or other has made a mistake. In a TOK question it is perfectly conceivable that the answers differ. What is important is that the analysis is thorough and that there are good reasons to back it up. It is possible that both conclusions are true. It is tempting to explain the plurality of good answers to knowledge questions in terms of a type of truth relativism: “it is just a matter of perspective”. A more likely explanation is that different interpretations of key ideas account for the different conclusions or that the weighting of different factors in the argument differ.

Knowledge questions are general questions about knowledge

Another challenging aspect of TOK is the requirement that a knowledge question is somehow more general than the particular examples which illustrate it. This requirement springs from the idea that TOK deals with second-order questions.

For example:

- In physics, one deals with questions about the material world. In TOK, we ask questions about knowledge in physics. How can the physicist be sure of his or her conclusions given that they are based on hypothesis and experiment? The student in TOK is not talking in physical terms because he or she is not talking about the physical world but the discipline of physics. Therefore, it is necessary to use a different, more generalized vocabulary. The physicist uses terms like particle, energy, mass and charge. In TOK, the student uses terms such as hypothesis, experimental data, interpretation, anomaly, induction, certainty, uncertainty, belief and knowledge. So knowledge questions should employ these terms, not the terms of physics.

This distinction can be seen in the following diagram.
Examples of knowledge questions

You can find knowledge questions underlying almost any issue. They are sometimes difficult to formulate precisely but they often lurk underneath popular and often controversial subjects that are discussed in the media, for example. It is a very useful exercise to try to tease out knowledge questions underlying articles in the media.

Here are two examples of a topic that has been discussed in newspaper articles and possible knowledge questions associated with the topic.

Example 1: Future population growth in Africa

- Not a knowledge question: “How can we predict future population growth in Africa?” This is not a knowledge question because it is a technical question within the discipline of population studies.
- Good knowledge question: “How can a mathematical model give us knowledge even if it does not yield accurate predictions?” This is now sufficiently general and explores the purpose and nature of mathematical modelling.

Example 2: The placebo effect and its impact on the medical profession

- Not a knowledge question: “How does the placebo effect work?” An answer to this might involve a technical explanation in psychology. This therefore sits above the line in figure 4.
- A good knowledge question: “How could we establish that X is an ‘active ingredient’ in causing Y?” This question is actually a rather general one about how we can know about causal links. It is a classic knowledge question.

Knowledge questions and assessment

Knowledge questions are at the heart of the assessment of TOK. The presentation and the essay both deal with knowledge questions.

The diagram in figure 4 can help explain the two assessment tasks in TOK. The TOK presentation starts above the line with a real-life situation described in “real-life” terms. At a certain point in the presentation the student is required to identify the underlying knowledge question (below the line). This is then explored using the language of TOK and a conclusion is reached which is translated back into real-life terms.

The TOK essay follows a path that is in some sense a mirror image of this. The prescribed titles for the essay are expressed in rather general TOK language; they sit below the line. The student is required to identify knowledge questions connected to the prescribed title. The student must then give them some concrete form by finding examples (above the line) which illustrate them. These examples are explored using the tools of TOK (which might require some excursions back below the line). Finally, a general conclusion to the essay will be located in TOK language below the line.

More details and guidance on the assessment tasks can be found in the section “Assessment details”.

Figure 4
The TOK course identifies eight specific ways of knowing (WOKs). They are:

- language
- sense perception
- emotion
- reason
- imagination
- faith
- intuition
- memory.

Students must explore a range of WOKs. It is suggested that studying four of these eight in depth would be appropriate. The WOKs selected for detailed study should be carefully selected to ensure a coherent and balanced approach.

There are two central purposes to the WOKs in TOK. On the one hand they are the tools that answer the question “how do we know?” and on the other hand they help us answer the question “how do I know?” For example, we can analyse the role of imagination in the construction of shared knowledge in terms of scientific discovery, but we can also discuss imagination in the context of personal knowledge and understanding.

While there may be a place in a TOK course to analyse WOKs and their impact on how individuals construct their own personal knowledge, TOK teachers are encouraged to explore WOKs, not in isolation, but from the perspective of their contribution to understanding different areas of knowledge.

Specific ways of knowing

Below is a brief introduction to each WOK. The questions preceding the description of each WOK are simply stimulus questions, designed to promote discussion and raise awareness of the individual WOKs and their impact on knowledge.

**Language**

*How does language shape knowledge? Does the importance of language in an area of knowledge ground it in a particular culture? How are metaphors used in the construction of knowledge?*

Language can refer to the mental faculty which allows people to learn and use complex communication systems, or it can refer to those systems themselves. Language consists of a system of signs with agreed or conventional meanings combined according to a set of rules for the purposes of communication, formulation of ideas, storage of knowledge or as a medium of thought. The term “signs” can be interpreted very broadly to include letters, symbols, sounds, gestures, images and even objects. Language is a crucial
part of our daily lives, but is also filled with potential problem areas, for example, ambiguity, sarcasm, irony and translation issues.

Language plays an important role in communicating knowledge. However, some see language as having an even more central role, arguing that language doesn’t just describe our experiences of the world but in fact actually structures those experiences. In the section on the knowledge framework there is a discussion about whether certain types of knowledge are actually constituted by language—the idea that language is part and parcel of the knowledge claim itself and not merely a description of something that exists independently of language. The view that facts about the world might be determined by the language is called linguistic determinism.

**Sense perception**

*How can we know if our senses are reliable? What is the role of expectation or theory in sense perception? What is the role of language in sense perception?*

Sense perception is the process by which we can gain knowledge about the outside world. Traditionally, there were believed to be five senses: sight, touch, smell, taste and hearing. However, many now argue that there are others such as a sense of heat, sense of pain, sense of movement, sense of balance and the senses of hunger and thirst, or a sense of where our body parts are.

Historically, the view that the senses provide the basis for all our knowledge was challenged by the idea that prior concepts might be needed before any perception takes place at all. Indeed, it is common now to view sense perception as an active process of interpreting the world according to prior expectations, conceptual frameworks and theories. There is, therefore, some disagreement as to whether we directly perceive the world as it is, or whether perception is an active process where we supply much of the content of our experiences ourselves.

**Emotion**

*Are emotions universal? Can/should we control our emotions? Are emotions the enemy of, or necessary for, good reasoning? Are emotions always linked to belief?*

The naturalistic view of emotions is that they are the products of natural processes, with physiological causes and effects. One supporter of this view was Darwin, who believed that emotions are purely physiological and therefore universal and experienced across all cultures. However, there seem to be many examples of culturally bound emotions, for example, the Chinese notion of “sad love”. The opposite view is therefore that of the social constructionists, who argue that emotions depend on a social consciousness, and have no natural basis at all. For example, emotions such as shame seem to presuppose a notion of right and wrong.

Emotion has sometimes been regarded as an unreliable way of knowing. Emotions have, for example, been criticized as being irrational obstacles to knowledge that distort our picture of reality. However, others believe that not only do emotions help make sense of social and cultural experiences and behaviours, but they are also the source of social, ethical and political knowledge by helping us form an understanding of the world around us.

**Reason**

*What is the difference between reason and logic? How reliable is inductive reasoning? Are we predictably irrational?*

Reason allows us to go beyond the immediate experience of our senses. It is closely linked to logic—the deducing of valid conclusions from given starting points or premises. Human reasoning can also be inferential in nature, allowing conclusions to be drawn that cannot be strictly deduced from their premises. It then becomes an interesting question of whether standards of rationality and norms of reasoning are
Inductive reasoning is the process of supporting general statements by a series of particular ones—the reverse of deductive reasoning which tends to proceed from the general to the particular. Inductive reasoning is by its nature inferential. Statements involving the word “all” are often not strictly provable given the difficulties in making observations of an infinite set of particulars. This is of importance in the natural sciences but also in human sciences such as psychology and economics.

Imagination

What is the role of imagination in producing knowledge about a real world? Can imagination reveal truths that reality hides? What is the role of the imagination in understanding others?

Imagination is often identified in a narrow sense as the capacity to form a mental representation of something without the stimulus of sense experience. Traditionally imagination has been associated with imagery and making a mental image of something. However, more recently interest in the imagination has also focused on exploring propositional imagining, or “imagining that”. The importance and power of the imagination is highlighted by a number of medical conditions which impact upon it, for example, conditions which can impair imagination such as severe autism, or conditions which can cause delusions such as severe schizophrenia.

Imagination is sometimes viewed in a broader way as being associated with creativity, problem-solving and originality. Here it might be the making of connections between otherwise disparate ideas in order to solve problems. This might be useful in model making or theory creation in the sciences and solving structural problems in the arts. Imagination is, however, also sometimes distrusted, in part because it is regarded as something that is derived in the mind of the individual and therefore subjective. Imagining is also sometimes associated with counterfactual reasoning; imagining “what would happen if …”, or “what would have happened if …”.

Imagination is also sometimes associated with possibility, in that it can be argued that only things which are possible can be imagined. In this way, the imagination is seen by some to provide evidence of what is and is not possible. In daily life, imagination has a particularly prominent role in entertainment, for example, fictional films or television programmes. However, it can be argued that imagination also plays a deeper role, for example, in moral education, developing empathy, or providing opportunity for self-expression and an increased understanding of the self.

Faith

Should humanism or atheism be described as a faith? Can theistic beliefs be considered knowledge because they are produced by a special cognitive faculty or “divine sense”? Does faith meet a psychological need?

The term “faith” is most frequently used to refer specifically to religious faith, but can also be used in a secular sense as a synonym for trust. Although most associated with belief in a God or gods, faith can be religious without being theistic, for example, in Buddhism. Alternatively it can be seen as a commitment to a particular interpretation of experience and reality which is not necessarily religious at all, such as humanism. Logical positivism claims that statements of faith have no meaningful cognitive content, so it doesn’t make sense to speak of faith as a way of knowing. However, for many people faith is a key way in which they try to understand and explain the world.

The evidence on which faith is based on is often controversial. This is particularly the case in the example of scripture, which those within the religious group often see as infallible evidence, while those outside the religious group might be more circumspect. While critics argue that faith is irrational and incoherent, others would argue that faith should be seen as a way of going beyond reason rather than being purely irrational. Indeed, although faith is often contrasted with reason, many religions regard faith and reason as
interdependent, for example, natural theology argues that it is only possible to access God through reason, and many religions regard reason as a God-given gift.

Some would argue that the criticism and controversy surrounding the evidence for faith claims is misplaced, arguing that faith is an act of trust and is an example of knowledge which is not evidence based. Indeed, in some traditions belief that is not based on evidence is seen as superior to belief that is based on evidence, the demand for concrete evidence being seen to signify a lack of faith. Given this controversy, teachers should provide the opportunity for a critical discussion of faith as a way of knowing. Its inclusion as a way of knowing should not be seen as an excuse for unthinking acceptance of knowledge claims in religion or other areas of knowledge.

**Intuition**

*Why are some people considered more intuitive than others? Are there certain things that you have to know prior to being able to learn anything at all? Should you trust your intuition?*

Intuition is sometimes described as immediate cognition, or knowledge which is immediately evident without prior inference, evidence or justification. Intuition is often contrasted with reason, as it is regarded as knowing without the use of rational processes. Jung (*Psychologische Typen* 1921) famously referred to intuition as perception via the unconscious, highlighting the idea that intuition is often seen as beliefs which are known without understanding how they are known.

Intuition is sometimes associated with the concepts of instinct and innate knowledge. For example, some would argue that although we do not have innate knowledge of any particular language, we have an intuitive capacity to use language. Intuition has been much discussed in the field of ethics in terms of whether we have moral intuition, or a kind of innate sense of right and wrong. It is also seen by some to play an important role in scientific advances.

To know something by intuition is to know something through introspection or an immediate awareness. In this way, some argue that it is impossible to justify, or that as it is immediately evident it requires no further justification. Some people are regarded as more intuitive than others, with intuitive people often being said to make quick instinctive decisions without having any identifiable rationale for those decisions. However, some have denied the existence of intuition as a separate way of knowing. For example, it has been suggested that intuition is a term which is often used to describe a combination of other ways of knowing, such as prior experience, heightened sense perception and an active imagination.

**Memory**

*Can we know things which are beyond our personal present experience? Is eyewitness testimony a reliable source of evidence? Can our beliefs contaminate our memory?*

Many discussions of knowledge tend to focus on how beliefs and knowledge are formed rather than on how they are remembered by the individual. However, most of the knowledge that individuals have is in the form of memory and therefore how we retain information and how past events and experiences are reconstructed is an important aspect of how personal knowledge is formed.

Memory, and particularly habit, has a strong link to procedural knowledge and remembering how to perform actions. In contrast to perception, memory refers to things which are not currently happening. And in contrast to imagination, memory refers to things which we believe really happened. Some would argue that memory is not itself a source of knowledge, but instead is a process which we use to recall knowledge gained in the past. However, although memory refers to knowledge gained in the past, it can be argued that even new knowledge is dependent on and influenced by memory. For example, how we interpret new situations can be heavily influenced by experience and previous events. In this way, apart from being a
“storage unit” for existing knowledge, memory can also be a mechanism that allows us to process new and unique situations.

The importance of memory can be highlighted by imagining the challenges that would be presented by losing our memory. Because so much of our personal knowledge is in the form of memory, issues surrounding the reliability of memory are also crucial. Memory retrieval is often regarded as unreliable, for example, because it is seen to be subjective or heavily influenced by emotion. However, we rely on our memory every day and because many of our memories seem to be reliable, this gives us confidence that our other memories are reliable.

Ways of knowing do not operate in isolation

Ways of knowing should not be viewed in isolation. They interact in various ways in the construction of knowledge and the formation of knowledge claims. For example, even a simple claim such as “this table is blue” involves a number of ways of knowing coming together. I need language to be able to understand the terms “table” and “blue”. I need a conceptual system based on reason to realize that a table is something that has the possibility of being blue. I need sense perception to recognize that what I see is a table and that the colour of the table is blue. In this way, the individual ways of knowing are woven together into more elaborate structures in order to generate knowledge in the areas of knowledge.
How do we know things? We know things because we use a range of methods of inquiry that incorporate ways of knowing to help construct knowledge in different areas of knowledge (AOKs).

The theory of knowledge course distinguishes between eight AOKs:

- mathematics
- natural sciences
- human sciences
- history
- the arts
- ethics
- religious knowledge systems
- indigenous knowledge systems.

Students must explore a range of AOKs. It is suggested that six of these eight would be appropriate.

While this guide identifies eight broad AOKs, students should be encouraged to think about individual academic disciplines, that is, to think about the nature of knowledge in their own specific IB subjects, such as chemistry, geography and dance.

**Knowledge framework**

One effective way to examine the AOKs is through a knowledge framework. A knowledge framework is a way of unpacking the AOKs and provides a vocabulary for comparing AOKs.

For each AOK the following can be examined:

- scope, motivation and applications
- specific terminology and concepts
- methods used to produce knowledge
- key historical developments
- interaction with personal knowledge.

Within this knowledge framework, key features of each area are identified, as are specific terminology and concepts which shape that area of knowledge. The key historical developments that have influenced and shaped each area are identified, as well as the ways that each makes use of particular methodology. Finally, there is opportunity for reflection on the interaction between shared and personal knowledge in each area. Knowledge frameworks are a very effective device to compare and contrast areas of knowledge.

The idea is that each AOK can be thought of, broadly speaking, as a coherent whole—a vast system with a rich inner structure. TOK aims to explore this structure and to understand just what it is that gives each AOK its particular character. It is also concerned with what these AOKs have in common. A useful strategy is to build a TOK course around comparing and contrasting the various AOKs, to look for features they have in common but also to highlight their differences and pinpoint what gives each its own characteristic flavour.
Comparison of different AOKs is not purely a descriptive task. It is analytical in the sense that the student should link the practices of inquiry to the knowledge that comes out in the end. For example, the reliability of knowledge within an AOK will depend critically upon the methods used to produce it. Making links of this sort is what is meant by analysis in TOK.

Figure 5

1. **Scope/applications**

   - What is the area of knowledge about?
   - What practical problems can be solved through applying this knowledge?
   - What makes this area of knowledge important?
   - What are the current open questions in this area—important questions that are currently unanswered?
   - Are there ethical considerations that limit the scope of inquiry? If so, what are they?

Figure 6

This component attempts to explore the range of the specific AOK within the totality of human knowledge and how that knowledge is used. Scope refers to the definition of the AOK in terms of subject matter, and the form that an AOK takes depends critically upon the nature of the problems it is trying to answer.

For example:

- biology studies living organisms and is mainly concerned with how they function
- mathematics is the study of quantity, space, shape and change
- in engineering, however, precise numerical methods are a matter of life and death
• music might not seem concerned with solving practical problems at all but the composer has to solve the “musical engineering” problems of building a piece of music; it has to be a unified whole and yet at the same time there has to be some sort of inherent contrast there to provide tension and energy and, for the listener, interest.

Exploration of the scope and applications of a particular AOK can lead to interesting discussions of the ethical considerations that have to be taken into account. Practitioners in a particular AOK might not be permitted to explore all the aspects that are of interest. There might be moral and ethical limits on the sort of investigations they undertake and experiments they perform.

2. Concepts/language

This element explores the way in which language is used in the production of knowledge in each AOK. The key idea is that language does not just communicate pre-existing “non-verbal” knowledge but that, in many cases, the language used actually constitutes knowledge. Take language away and there is nothing left. One of the reasons for this is that the language names concepts—these are the building blocks for knowledge. An AOK is a system of relationships between its key concepts. Different building blocks build quite different AOKs and produce different ways of thinking about the world.

For example:
• in physics key concepts include those of causation, energy and its conservation principle, field, charge and so on
• in visual arts we might be concerned with the colour palette, texture, composition, movement, symbolism and technique
• in music the central concepts might be melody, rhythm, harmony, tension, relaxation, texture and colour.

Discussions of the concepts and language that shape an AOK can link well to discussions about shared knowledge. Language allows knowledge to be passed on to others and to be accumulated over time for future generations. This is what makes this sort of knowledge “shared knowledge”. The fact that it can be communicated between individuals across space and over time is important. A significant proportion of current knowledge is not new but has been passed down to us from the past or from other parts of the world.
3. Methodology

Figure 8

One of the most striking differences between the AOKs is the methods that they use. Examining and comparing the methodologies of the different AOKs begins with students being able to identify the specific methods or procedures used in an AOK, and exploring the assumptions that underlie those methods.

Assumptions and values play an important part in the methodology that underpins the production of knowledge. Each AOK establishes certain things as being important and others less so—each has a set of values that underpin the knowledge that is produced. No AOK is value free—some methods are better than others, some facts are more reliable than others, some theoretical models give better understanding than others. Recognition of these values and how they affect the methodology that is used is crucial to understanding the character of the AOK.

For example, in the natural sciences, much knowledge comes about through testing hypotheses by experiment; this assumes that laboratory conditions accurately mimic what happens in the rest of the universe and that the world can be understood as a system of causes determining effects.

One way to explore methodology is to examine the question of what counts as a fact in this particular AOK. Another way would be to examine the question of what counts as an explanation in this particular AOK. For example:

- in history, an explanation might consist of an overarching theory giving plausible motivations to the various historical actors that joins up the isolated historical documents
- in literature, the explanation of text might involve examination of its themes, motives and characterization through the literary devices employed.

Another way to explore methodology is to examine any constraints on the methods that can be used; for example, ethical constraints on experiments conducted in the human sciences.
4. Historical development

AOKs are dynamic entities that change over time as conceptual developments and advances are made in methodology. This need not be seen as a problem but rather an advantage—our systems are flexible and capable of responding to developments. Knowledge can, therefore, be considered provisional.

For example:

- Consider a Swedish school textbook in history from 1912: it is quite different in its idea of history from those used today; a physics textbook from 1912 seems to have much the same idea about physics but the content is likely to be different.
- An artwork might derive much of its meaning from the historical context in which it is produced and might even reference other earlier works.

Tracking the rough historical development of an AOK is a valuable tool in TOK. It is tempting to speculate that if we re-ran the history of human knowledge then the AOKs might look quite different to their current form. How much of our knowledge depends on accidents of history? Are certain AOKs more susceptible to these historical factors than others? Even our systems of measurement (m, kg, s) are historically situated and so, of course, are the concepts and the language employed by subject disciplines. Interesting discussions can be had over why particular historical events and factors have had such an impact on the development of a particular AOK.
5. Links to personal knowledge

<table>
<thead>
<tr>
<th>Knowledge framework</th>
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<tbody>
<tr>
<td>Scope/applications</td>
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<tr>
<td>Concepts/language</td>
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<tr>
<td>Methodology</td>
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<tr>
<td>Historical development</td>
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<tr>
<td>Links to personal knowledge</td>
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</table>

- Why is this area significant to the individual?
- What is the nature of the contribution of individuals to this area?
- What responsibilities rest upon the individual knower by virtue of his or her knowledge in this area?
- What are the implications of this area of knowledge for one's own individual perspective?
- What assumptions underlie the individual's own approach to this knowledge?

---

**Figure 10**

There are links and interactions between shared and personal knowledge. Individuals contribute to shared knowledge. Their contributions have to go through whatever validation procedures are required by a particular discipline in order to be counted as “common” knowledge in that area. But shared knowledge also contributes to an individual’s own understanding of the world. This is one, but not the only, purpose of shared knowledge—that it enables individuals to make sense of the world. The nature of this interaction between shared and personal knowledge is the last component of the knowledge framework to be examined. It is important because it addresses the question “so what does this mean for me?” What impact do these AOKs have on our individual lives and the way in which we view the world? How does this area form or change our perspective?

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**Specific areas of knowledge**

On the following pages there is a brief introduction to each AOK. There are also diagrams providing examples of how each AOK could be approached, including suggested topics for study and knowledge questions. It should be noted that these are suggestions only, and can be used or substituted for others according to the specific interests and needs of the TOK teacher and students. These diagrams are tools which teachers should use with good judgment, being careful not to use them in such a way that the course becomes formulaic.
Mathematics

Is there a distinction between truth and certainty in mathematics? Is mathematics independent of culture? Is mathematics discovered or invented?

Mathematics is founded on a set of more or less universally accepted definitions and basic assumptions. It proceeds from a system of axioms using deductive reasoning to prove theorems or mathematical truths. These have a degree of certainty unmatched by any other area of knowledge, making it excellent raw material for study in TOK.

Despite, or rather because of, the strict confines of mathematical logic, mathematics is an enormously creative subject, asking of its practitioners great leaps of the imagination. Pure mathematics requires no prior sense perception at the start of inquiry but the application of mathematics to real-world situations requires techniques such as those used in the natural and human sciences. Indeed, most research in the natural and human sciences is underpinned by mathematics. There are also often close links between mathematics and the arts where formal requirements for harmony or symmetry impose mathematical structures on a work.
Why is there sometimes an uneasy fit between mathematical descriptions and the world? (For example, if I had four cows and then took five away, how many would be left?)

Is mathematics invented or discovered?

If mathematics is an abstract intellectual game (like chess) then why is it so good at describing the world?

If mathematics is created by man, why do we sometimes feel that mathematical truths are objective facts about the world rather than something constructed by human beings?

If mathematics is “out there” in the world then where exactly can it be found?

Why should elegance or beauty be relevant to mathematical value?

Examples of possible topics of study

- Simple mathematical proofs
- Beauty and elegance in mathematics
- Axioms and the rejection of the axiomatic approach
- Mathematics in nature

Figure 11
Natural sciences

What does it mean for a discipline to be a science? Is there just one scientific method? Should there be ethical constraints on the pursuit of scientific knowledge?

The natural sciences seek to discover laws of nature—regularities in the natural world. These are often causal relationships of the form “if X happens then Y will be the result”. This description implies that there is an attempt to produce a system of knowledge that is independent of human agency. Whether this is indeed possible is a matter of debate.

The methods of the natural sciences based on observation of the world as a means of testing hypotheses about it are designed to reduce the effects of human desires, expectations and preferences, in other words they are considered objective. In this sense, the natural sciences emphasize the role of empirical inquiry: scientific knowledge must be able to withstand the test of experience and experiment.

One interesting area of discussion is what differentiates the scientific from the non-scientific. Many would suggest that it is the methods used in science. It is therefore interesting to consider what it is about these methods that mean that the knowledge they generate is often regarded as more reliable than those employed by other AOKs.

<table>
<thead>
<tr>
<th>Knowledge framework</th>
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<tbody>
<tr>
<td>• natural science is a system of knowledge of the natural world largely based on observation and constructed using reason and imagination</td>
</tr>
<tr>
<td>• the sciences are shared knowledge, often shared by a large grouping geographically spread and largely independent of culture</td>
</tr>
<tr>
<td>• prediction is often an important feature of scientific knowledge, but understanding is also a prime purpose</td>
</tr>
<tr>
<td>• natural sciences are interested in producing generalized statements, principles or scientific laws about the natural world</td>
</tr>
<tr>
<td>• most of these laws are causal: If event A happens then B will happen as a result</td>
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<thead>
<tr>
<th>Concepts/language</th>
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<tbody>
<tr>
<td>• many of the laws of the natural sciences are stated using the language of mathematics—maths is central</td>
</tr>
<tr>
<td>• language of the sciences is precise in order to eliminate ambiguity which might affect the reasoning process</td>
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<tr>
<th>Methodology</th>
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<tr>
<td>• measurement involves interaction with the world, but this interaction can sometimes change the aspect of the world we are trying to measure</td>
</tr>
<tr>
<td>• models are important in most areas of the natural sciences</td>
</tr>
<tr>
<td>• classification is a central idea in many of the natural sciences</td>
</tr>
<tr>
<td>• among the methods employed by the natural sciences are: hypothesis-deduction and induction—use of reason and sense perception</td>
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<tr>
<th>Historical development</th>
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<tr>
<td>• there have been a number of pivotal shifts of thinking in the development of the natural sciences</td>
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<tr>
<th>Links to personal knowledge</th>
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<tr>
<td>• the natural sciences give us a view of ourselves as material entities behaving according to universal laws</td>
</tr>
<tr>
<td>• there is little space here to see ourselves as rational, free agents with desires and the ability to choose</td>
</tr>
<tr>
<td>• individuals have contributed to scientific progress, often in revolutionary ways</td>
</tr>
<tr>
<td>• use of imagination, intuition and emotion in creation of hypotheses</td>
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</table>
Given the problems associated with the inductive process (going from the particular to the general), how is it that science can be reliable?

How does one know in advance which factors (to measure, say) will be relevant to the final explanation?

How can one decide when one model/explanation/theory is better than another?

How can we build understanding about the world independent of the human act of measuring it?

How can it be that scientific knowledge changes over time?

How can we know cause and effect relationships given that one can only ever observe correlation?

Knowledge questions

Examples of possible topics of study

The problem of induction

Popper and falsificationism

The scientific method

Scientific revolutions and paradigm shifts

Figure 12

Human sciences

To what extent are the human sciences reliable? Can human behaviour be subject to laws in the same way as the material world? What constitutes good evidence in the human sciences?

In TOK, the term “human sciences” includes many of the subjects in group 3 (individuals and societies) in the Diploma Programme. In simple terms, the human sciences study the reality of being human. More specifically, the human sciences study the social, cultural and biological aspects of human existence. If we add the study of human behaviour to this definition then the Diploma Programme offerings cover a range of human sciences including psychology, social and cultural anthropology, economics and geography.

A fundamental difference between human sciences and natural sciences is in the interpretation of the word “science”. The human sciences might be classified as science because they use the scientific method to test the validity and reliability of hypotheses. However, unlike the natural sciences, the phenomena they try to explain might not possess hard and fast laws that admit no exceptions. They might therefore resort to statistical methods to establish their findings, producing knowledge that is less reliable in terms of issuing predictions.
### Areas of knowledge

#### Knowledge framework

- **Scope/applications**
  - investigate and understand human behaviour
  - includes a diverse range of disciplines: anthropology, economics, psychology, sociology
  - some disciplines aim broadly to predict human behaviour (economics, applied sociology)

- **Concepts/language**
  - key concepts such as opportunity cost in economics
  - use of mathematical language to suggest intellectual rigour
  - problems with wording of questionnaires and the difficulty of neutral language

- **Methodology**
  - experimental method
  - use of questionnaires, polls
  - direct observation of human behaviour
  - use of models
  - use of reason to construct plausible theory consistent with other accepted knowledge in the field
  - some assumptions of human rationality (economics), or law-like behaviour (psychology)
  - use of statistical methods—on what basis to choose things like significance levels of tests?

- **Historical development**
  - early views of economics as study of man as a maximizer of utility have been replaced by modern behavioural economics which sees man as essentially irrational and heuristic
  - early ideas of anthropology as a study in human progress have been replaced post-Boaz with less value-laden perspectives
  - Freudian psychodynamics have been replaced by a drive towards empirical observation of behaviour in modern functional theories in psychology

- **Links to personal knowledge**
  - understanding of self as a locus of consciousness, as an economic agent or as an individual defined relative to a social background
  - significant contributions made by individuals in all fields: Smith, Ricardo, Keynes, Friedmann in economics, Boaz in anthropology, Freud, Watson in psychology
  - modern economics and psychology are more collaborative, although anthropology seems to be more open to individual contributions
  - to what extent is it legitimate for the inquirer to draw upon his/her own experiences as evidence in his/her investigations in the human sciences (the verstehen approach)?
  - to what extent are personal factors such as gender and age important in the human sciences?
Knowledge questions

- Human sciences are less able to predict because humans have free will. But human sciences nevertheless try to establish laws of human behaviour. How can this be?
- To what extent are the methods of the human sciences "scientific"?
- There are exceptions to laws in the human sciences. To what extent then are these actually laws?
- How can one eliminate the effect of the observer being part of the system in the human sciences (see the Hawthorne effect in psychology or the field worker being part of the community in anthropology)?
- In the verstehen approach, how might the emotions of the investigator as object of study affect the result of the investigation?
- How can one rely on the results from questionnaires given the problems of wording, leading questions, sampling and selection effects and the fact that respondents might not either know the truth about their own intentions or indeed tell it?
- How can we judge whether one model is better than another?

Examples of possible topics of study

- The relationship between the human sciences and the natural sciences
- Observation and the effect of the observer
- Polls, questionnaires and leading questions
- Predictions, trends and laws

Figure 13
History

What is unique about the methodology of history? Is eyewitness testimony a reliable source of evidence? How do we decide which events are historically significant?

History is an area of knowledge that studies the recorded past. It raises knowledge questions such as whether it is possible to talk meaningfully about a historical fact and what such a fact might be, or how far we can speak with certainty about anything in the past. Studying history also deepens our understanding of human behaviour, as reflecting on the past can help us to make sense of the present.

Documentary evidence plays an important role in history, which raises questions about the basis for judgments of reliability of that evidence. The individual historian also plays an important role in history and in the 20th century there was much debate over whether historical facts exist independently of historians. Some argue that there is always a subjective element in historical writing because historians are influenced by the historical and social environment in which they are writing and this unavoidably affects their selection and interpretation of evidence.

### Knowledge framework

<table>
<thead>
<tr>
<th>Scope/applications</th>
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<tbody>
<tr>
<td>the study of the recorded past</td>
</tr>
<tr>
<td>helps make sense of the present</td>
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<tr>
<td>knowledge shared by group to help produce a sense of common heritage</td>
</tr>
<tr>
<td>perhaps allows us in a limited way to envisage possible futures</td>
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<table>
<thead>
<tr>
<th>Concepts/language</th>
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</thead>
<tbody>
<tr>
<td>narrative style appropriate for the purpose of understanding the past</td>
</tr>
<tr>
<td>designed for understanding possibly at an emotional level rather than strict objective disinterest</td>
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<thead>
<tr>
<th>Methodology</th>
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</thead>
<tbody>
<tr>
<td>use of contemporary documents as fixed points of historical theory</td>
</tr>
<tr>
<td>historical theory being constructed out of the available evidence by reason and imagination</td>
</tr>
<tr>
<td>issues of selection and interpretation of source material</td>
</tr>
<tr>
<td>issues of reliability of first-hand accounts—memory and observation are affected by interests and expectation</td>
</tr>
<tr>
<td>history seems to presuppose a theory of human action. For example, the view of history as being shaped by the action of individuals as opposed to the idea of history as the playing out of class struggles or of a zeitgeist</td>
</tr>
<tr>
<td>an explanation in history is a plausible theory that explains the relevant source material and fits other accepted theories</td>
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<table>
<thead>
<tr>
<th>Historical development</th>
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<tbody>
<tr>
<td>present preoccupations tend to affect the study of past events</td>
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<tr>
<td>history itself looked different in the past</td>
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<thead>
<tr>
<th>Links to personal knowledge</th>
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<tbody>
<tr>
<td>understanding one’s history gives a clear sense of personal identity</td>
</tr>
<tr>
<td>history tends to be constructed through the interaction of individual historians—there is less emphasis on collaborative work than in the natural sciences</td>
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</table>
Knowledge questions

- Is it possible for historical writing to be free from perspective?
- How does a historian assess the reliability of sources?
- How can one gauge the extent to which a history is told from a particular cultural or national perspective?
- What is the relation between the style of language used and the history written?
- What is a fact in history?
- How can historical accounts be assessed?
- What distinguishes a better historical account from a worse one?

Examples of possible topics of study

- Reliability of sources
- Objectivity in history
- The relationship between history and the human sciences
- Progress and patterns in history

Figure 14
The arts

How can the subjective viewpoint of an individual contribute to knowledge in the arts? On what basis can the merit of a work of art be judged? Is there any point in discussing the arts—should we not simply experience them?

“The arts” is a collective term that encompasses the creative productions of humans and encompasses the visual arts, the performing arts and the literary arts. The arts explore the experience and reality of being human and are an essential element of culture.

The arts could be thought of as creating a bridge between personal knowledge and shared knowledge. Many of them are collaborative. They use emotion as a currency to generate significance at a personal level but reason provides a restrictive framework necessary for the creation of meaning: artworks have their own inner logic. Some regard the arts as having an extra-artistic cognitive function, that they have a message about man’s place in the world which might have social or political implications. For example, there might be a case for supposing that the arts have an important function as a medium for social criticism and transformation. In any case, there is a widespread belief that the arts have a higher purpose to educate by encouraging introspection and sometimes making us think about how we should live our lives.
Areas of knowledge

Knowledge questions

- Are the arts a system of knowledge?
- If artworks are products of the imagination of the artist, how is it that they constitute a system of knowledge?
- What is the relationship between the artist and the artwork?
- Is the aesthetic value of an artwork purely a subjective matter?
- What is the importance of form in artwork?
- Does art enlarge what it is possible to think?
- Is it possible that aesthetic value is at its base something universal—a fact about human beings?

Examples of possible topics of study

- Art as a vehicle for social critique
- Artwork used to affect the beliefs of individuals and groups (for example, advertising, film, literature, folksongs)
- Art forms that are strongly rooted in a particular culture or tradition
- Art and morality (for example, Riefenstahl, Kirkup)

Figure 15
Ethics

Is there such a thing as moral knowledge? Does the rightness or wrongness of an action depend on the situation? Are all moral opinions equally valid? Is there such a thing as a moral fact?

One thing often said to distinguish humans from other animals is morality. A key question in ethical discussions in TOK is therefore whether we can really know whether something is moral. What is peculiar about moral values is that they seem to embody obligations for action.

An example of a key area of discussion in ethics is the issue of moral rules. There is disagreement about whether being moral is about following rules, not least because some would question whether moral rules really exist at all. There is also debate about whether moral rules should ever be broken, and if so, in what circumstances. Other key areas of discussion include the issue of whether humans are essentially altruistic or selfish, or whether the consequences of, or motivation for, an action is the location of moral value.
Knowledge questions

- In what sense can ethics be regarded as a system of knowledge?
- How are conflicts between different ethical systems resolved?
- To what extent might lack of knowledge be an excuse for unethical conduct?
- To what extent might possession of knowledge carry with it moral obligations?
- Do people act against their own interests?
- Do moral truths exist?
- Why be moral?

Examples of possible topics of study

- Emotion and reason in ethics
- Ethical dilemmas
- Ethical theories (for example, utilitarianism, virtue ethics, Kantian ethics)
- Ethical language

Figure 16
Religious knowledge systems

How do we decide between the competing claims of different religious knowledge systems? Can there ever be a basis for religious knowledge that is independent of the culture that produces it? Is atheism as much a matter of faith as religious belief?

Religious knowledge systems offer answers to fundamental questions about the meaning and purpose of human life. This area of knowledge incorporates a diverse range of different beliefs and systems; for example, varieties of theism, pantheism and polytheism. Some people believe that there is one true religion whereas others, known as religious pluralists, argue that the different religions are just different reflections of the same underlying truth. Religious knowledge has both a shared and personal dimension and offers a concrete context, within the TOK classroom, to explore the links between the two.

Religion is often regarded as a sensitive area in which discussions should be had with caution, in part because people have very personal and deeply held convictions regarding religious matters. However, for many people their religion has a major impact on how they understand the world, permeating their thinking and influencing their understanding of other AOKs, for example, the idea that ethics and religion are inextricably linked. In any case, for many, religion provides a backdrop to all the other knowledge they have.

<table>
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<tr>
<th>Knowledge framework</th>
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</table>
| **Scope/applications** | • attempts to explain the meaning and purpose of life  
                          • incorporates a diverse range of systems from polytheism to pantheism |
| **Concepts/language**  | • difficulties in using human language to describe the divine  
                          • importance of analogy and metaphor  
                          • language shifts: oral to written, Latin to vernacular  
                          • conventions: authority of scripture in many systems, leaders and authority figures  
                          • key concepts: faith, miracles, god(s), revelation |
| **Methodology**        | • argumentation, use of reason  
                          • interpretation  
                          • use of revelation  
                          • sense perception  
                          • authority  
                          • value on faith |
| **Historical development** | • debates between literal/fundamentalist, conservative and liberal approaches  
                               • impact of scientific knowledge  
                               • language developments leading to wider developments |
| **Links to personal knowledge** | • understanding of the self—personal views on life after death, personal moral decision-making  
                                 • emotional element in religious belief  
                                 • attitudes and behaviour towards others  
                                 • founding figures: Muhammed  
                                 • spiritual leaders: Dalai Lama  
                                 • individuals who have changed the course of religious history such as Martin Luther  
                                 • role of collaboration—community element: ummah in Islam, evangelism and religious pluralism |
Knowledge questions

- What is the difference between religious feelings, religious beliefs and religious faith?
- Is it possible to know God?
- Are religious beliefs reasonable?
- Is faith irrational?
- Where do religious beliefs come from?
- Can you think of any evidence which would convince you that God does not exist?
- What is the value of thinking about questions to which there are no definite answers?
- How do we decide between the competing claims of different religious knowledge systems?

Examples of possible topics of study

- Arguments for and against the existence of God
- Religious language
- Religious experience and miracles
- Religious pluralism

Figure 17
Indigenous knowledge systems

In what ways are sense perception and memory crucial in constructing knowledge in indigenous knowledge systems? How do beliefs about the physical and metaphysical world influence the pursuit of knowledge in indigenous knowledge systems? How do indigenous people use the concept of respect to relate to their view of the world?

Indigenous knowledge systems explore local knowledge unique to a particular culture or society. The term usually refers to the knowledge constructed by a particular group of people such as the Namaqua people of Southern Africa, the Secoya people of Ecuador and Peru, the Ryukyuan people of Japan and the Wopkaimin people of Papua New Guinea. An important feature of indigenous knowledge systems is that they are not static. They are dynamic as a result of both internal and external influences. The Maori knowledge system today, for example, is a mixture of traditional knowledge and knowledge inherited over time from exposure to European culture.

TOK students can explore this AOK from a general, broad point of view to raise awareness of the diversity of indigenous knowledge systems or they could study a particular indigenous knowledge system. When studying indigenous knowledge systems, it is important to examine the methods of communication, decision-making processes, thinking processes and the holistic view of knowledge.
Areas of knowledge

Knowledge questions

- How reliable are “oral traditions” in preserving cultural heritage in indigenous knowledge systems?
- To what extent does the fact that early literature on indigenous knowledge systems was written from a non-indigenous perspective affect its credibility?
- How does sense perception play a fundamental role in the acquisition of knowledge in indigenous knowledge systems?
- What elements of universal significance may we discern in indigenous knowledge systems?
- To what extent can disinformation by education and governance threaten indigenous knowledge systems?
- Why is there often such a strong connection between indigenous knowledge and cosmology?
- What are the roles of folklore, rituals and songs in indigenous knowledge systems?

Examples of possible topics of study

- The nature and role of artifacts
- Cycles and changes in the earth and sky
- Plants and animal behaviour
- The impact of technology on the relationship between indigenous peoples and their environment

Figure 18